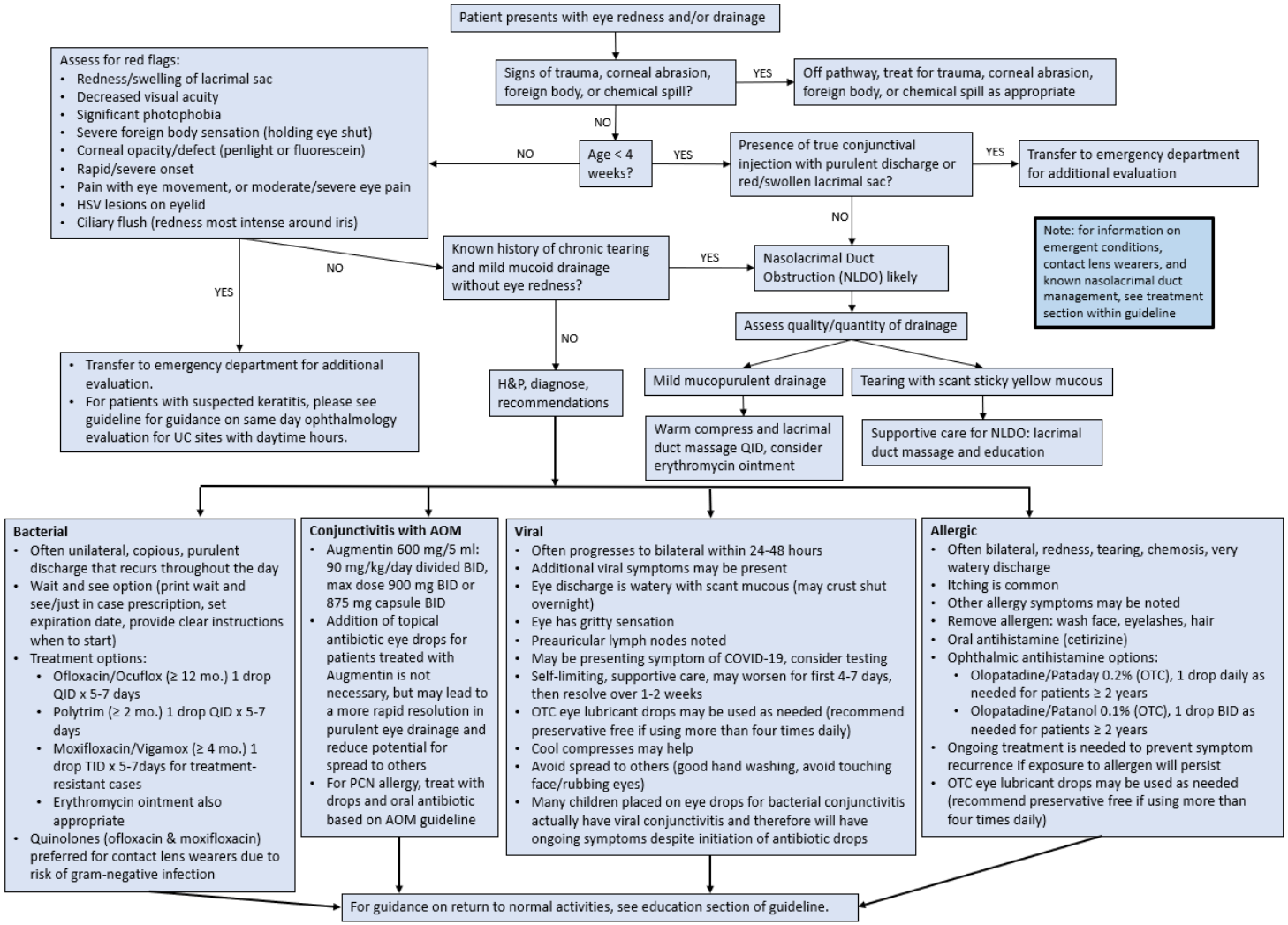
Children's Hospital and Health System, Inc.
CW Urgent Care & CMG Evidence Based Guideline: Conjunctivitis

SUBJECT: Conjunctivitis



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Purpose: To evaluate and initiate treatment of Conjunctivitis.

Definitions

- Conjunctivitis: Inflammation of the conjunctiva presenting with hyperemia or injection resulting in "pink eye." Severity ranges from mild hyperemia with tearing to subconjunctival hemorrhage or chemosis with copious purulent discharge and eyelid edema.
- Keratitis: Inflammation of the cornea, may present with pain, impaired eyesight, photophobia, conjunctival injection, or foreign body sensation. Patients in whom keratitis is suspected require urgent ophthalmology consultation. Note that other conditions that cause corneal defects, such as corneal abrasion, may present with foreign body sensation and photophobia. Careful history as to onset of symptoms (rapid/abrupt in corneal abrasion) can help distinguish between the two.

Etiology: The etiology of conjunctivitis is broad and includes:

- Infectious
    - Bacterial:
        - Common infections due to *S. Pneumoniae*, *H. influenzae*, *M. catarrhalis*, and *S. aureus*
        - Hyperacute bacterial conjunctivitis due to *N. gonorroeae* in the newborn period or in sexually active patients. Patients present with rapid/severe onset of conjunctivitis with copious purulent discharge
        - *Chlamydia trachomatis*, especially in the neonatal period or in sexually active patients. In neonates, it typically presents 5-14 days after delivery, although earlier disease can occur. Erythema, edema of the eyelids along with conjunctival injection and purulent eye discharge are noted.
        - Contact lens wearers are at risk for conjunctivitis due to gram negative organisms
        - Acute otitis media with bacterial conjunctivitis is often due to non-typeable *H. influenzae*
    - Viral: conjunctivitis due to viral infections can be simple or severe with associated corneal inflammation (keratitis)
        - Simple viral conjunctivitis is typically caused by adenovirus as well as other common causes of viral URI's in children
        - SARS-CoV-2 infection may present with viral conjunctivitis
        - Viral conjunctivitis with associated corneal involvement
            - Certain strains of adenovirus can cause epidemic keratoconjunctivitis (EKC), with associated corneal infiltrates
            - Other viral infections that lead to keratitis will also cause the conjunctiva to be inflamed. These include HSV keratitis, acute varicella zoster (chicken pox), or herpes zoster (shingles).
- Allergic: typically due to airborne allergens, with associated itching, other typical allergic symptoms, or personal or family history of allergy/atopic disease.
- Toxic: typically due to a medication or preservative.
- Noninfectious/non-inflammatory: chronic dry eye, recent ocular foreign body

Differential Diagnosis

- Differential Diagnosis of a pink or red eye:
    - Corneal trauma or ulceration
    - Ocular foreign body
    - Systemic disease (Kawasaki Disease, MIS-C, autoimmune diseases including JIA, Lupus, IBD)
    - Infectious Keratitis (HSV, certain adenovirus strains, zoster, contact lens use)
    - Angle closure glaucoma

- Diagnostic consideration for eye drainage without redness: Congenital nasolacrimal duct obstruction (see Appendix A). Tearing of the affected eye with mattering and crusting of the eyelashes. Yellow, sticky mucoid drainage may be present. The conjunctiva should not be red, although the lower eyelid can be mildly red/irritated from rubbing at the area to remove tears and discharge.

Guideline

Subjective Data/History

- General:
    - HPI: age, onset, location, duration, associated symptoms, ill contacts
    - Past medical history: allergy/atopic disease, systemic disease
    - Family history: allergy/atopic disease, autoimmune or other systemic disease
- Ocular specific:
    - Known or suspected trauma or foreign body
    - Contact lens use and practices (sleeping in lenses, prolonged wear, cleaning practices)
    - Symptoms suggestive of corneal involvement or other deep ocular structures
        - Decreased visual acuity (not just mild blurring)
        - Significant foreign body sensation (holding eye shut)
        - Photophobia
        - Pain with ocular movement
        - Moderate to severe pain in eye

Objective Data/Physical Exam

- General:
    - Vital signs (especially presence of fever), general appearance.
    - Evaluate for signs of allergy or viral URI (nasal congestion/rhinorrhea, throat exam, cervical or pre-auricular lymphadenopathy, lungs)
    - In infants and children who present with conjunctivitis, assess the tympanic membranes for presence of coexisting acute suppurative otitis media
    - Evaluate for signs of other systemic illness (rash, joints) as appropriate
- Ocular specific:
    - Eyelids: Boggy edema suggestive of allergic etiology, tense eyelid edema with

erythema/warmth suggestive of periorbital or orbital cellulitis.
- Lacrimal sac: Redness or swelling of the lacrimal sac suggests acute dacryocystitis
- Drainage: Tearing, mucoid, purulent
- Conjunctiva: degree of injection, laterality. If injection is most pronounced in a ring around the cornea, this is more concerning for infectious keratitis, iritis, or angle closure glaucoma.
- Cornea: presence of obvious defect with penlight exam
- Pupil: size, reaction to light
- Photophobia presence/absence and severity
- Visual acuity: presence of blurred vision versus true decreased visual acuity to affected eye (Snellen chart).
- Ocular red flags (if noted, patient likely needs urgent or emergent evaluation):
  - Redness or swelling of lacrimal sac
  - Neonates < 4 weeks age with true conjunctivitis (distinguish from Nasolacrimal Duct Obstruction-see Appendix A). Needs EDTC transfer
  - Decreased visual acuity
  - Significant photophobia
  - Severe foreign body sensation (holding eye shut)
  - Corneal opacity/defect
  - Rapid/severe onset
  - Pain with eye movement
  - Ciliary flush (injection most pronounced in a ring around the cornea)
  - HSV lesions on eyelid

Diagnostic Studies in Urgent Care

- Consider fluorescein staining of cornea in patients with history or exam findings that suggest presence of corneal involvement (significant foreign body sensation, photophobia, decreased visual acuity, pain)
- In most cases, bacterial conjunctival culture is not required prior to starting antibiotic therapy, except:
  - **Patients with ophthalmia neonatorium (conjunctivitis in first four weeks of life) should have bacterial conjunctival gram stain and culture along with additional diagnostic testing in emergency department.**
  - Patients with severe, recurrent, or refractory disease, conjunctival swabs should be sent for bacterial Gram stain and culture.
- Consider testing for SARS-CoV-2 in patients with viral conjunctivitis

Clinical presentation pearls:

- "Typical" bacterial conjunctivitis:
  - Redness and discharge is typically unilateral, although bilateral involvement can occur
  - Affected eye may be crusted shut in the morning, and purulent discharge continues during the day and is thick and green, yellow, or white. Purulent discharge tends to reappear within minutes of wiping the eye, especially at the

corners of the eye.
    - Highly contagious
- "Typical" viral conjunctivitis:
    - Bilateral involvement is common, with the second eye involved within 24-48 hours of the first.
    - Affected eye may be crusted shut in the morning, but drainage during the day is typically watery with scant mucous.
    - Eye may have a burning or gritty sensation
    - Systemic symptoms may be noted, along with preauricular lymph node enlargement
    - Highly contagious
    - Like any typical viral infection, symptoms may get worse for the first 5 days, and then gradually resolve within 2-3 weeks.
- Allergic conjunctivitis:
    - Typically bilateral with redness, tearing, or very watery discharge.
    - Itching is commonly seen
    - Sneezing, itching at nose may be present.
    - Chemosis (edema of the conjunctiva) may be noted, along with eyelid swelling.
    - Eversion of the upper lid may show papillary reaction ("dot like" dilated capillaries with edema).

Conditions that warrant additional evaluation:

- Conjunctivitis in neonates (ophthalmia neonatorum: first four weeks of life):
    - Important to distinguish true conjunctivitis from eye drainage due to nasolacrimal duct obstruction (NLDO). Infants with NLDO will have watery to mucousy stringy yellow discharge, but do not have redness of the conjunctiva itself. See Appendix A for additional details.
    - **Neonates that present with true conjunctival injection and purulent discharge need additional same day evaluation in the emergency department for additional diagnostic testing and systemic antibiotic therapy.**
        - Chlamydial infections are the most common bacterial cause of conjunctivitis in neonates, along with *S. pneumoniae* and *H. influenza*.
        - *N. gonorrhea* is a rare but important cause, but must be ruled out due to potential for rapid progression of disease with potential corneal scarring, blindness, and septicemia.
- Keratitis (inflammation of the cornea):
    - Presents with true foreign body sensation (not just eye feeling "gritty"), pain, photophobia, decreased visual acuity. Patients may have difficulty holding the eye open spontaneously.
    - Consider keratitis in:
        - Patients with recent/known HSV infection (lips, fingers), or if HSV like lesions noted on eyelids. Look for dendritic formations in cornea on fluorescein staining.
        - Contact lens wearers
        - Patients who develop worsening symptoms a few days following

development of viral conjunctivitis (epidemic keratoconjunctivitis due to adenovirus)
    - Penlight may show corneal infiltrates or defects.
    - If symptoms suggest keratitis, strongly consider fluorescein staining to evaluate for corneal defect.
    - If keratitis is suspected, patient needs same day ophthalmology evaluation. For UC locations open in the evening, weekends, or holidays, send patients with keratitis to the Emergency Department for same day ophthalmology evaluation. For UC locations that are open during typical business hours, providers can contact the CW ophthalmology clinic at 414–266–2020 (speak to triage) to see if emergency slot is available for same day appointment. Same day appointments are unlikely for patients seen after 1 pm in UC. For all patients presenting later in the day or after hours /weekends/holidays, or if same day appointment is not available, patients should be sent to the Emergency Department.
- Hyperacute conjunctivitis due to *N. gonorrhoeae*:
    - Sexually active patients
    - Rapid onset of redness, irritation, tenderness
    - Severe/copious purulent discharge
    - Can progress rapidly to corneal perforation, needs emergency department evaluation.
- Chronic conjunctivitis: conjunctivitis lasting more than 4 weeks. Urgent ophthalmology consultation recommended.

Treatment (see treatment algorithm)

- Emergent Consultation
    - Conditions that warrant emergency department transfer:
        - True neonatal conjunctivitis (< 4 weeks)
        - Hyperacute bacterial conjunctivitis
        - Acute dacryocycstitis (red, swollen lacrimal sac) in any patient < 5 years
        - Patients with suspected keratitis
- Contact Lens Wearers:
    - Immediately discontinue contact lens use, discard lenses immediately if using disposable lenses. If using non-disposable lenses, discontinue use, disinfect, and family should discuss with their ophthalmologist when and how to resume use.
    - Contact lens use can resume with a fresh pair of contacts once redness is fully resolved
    - Contact lens case should be discarded and replaced
    - Contact lens wearers with bacterial conjunctivitis should follow up with ophthalmology within 2-3 days of UC visit
    - Contact lens wearers with suspected keratitis should be transferred to the emergency department for additional evaluation
- Purulent eye drainage in infants/toddlers with known nasolacrimal duct obstruction:
    - See Appendix A: Congenital Nasolacrimal Duct Obstruction, section on mild dacryocystitis for details.

- These recommendations apply to infants with mild mucopurulent discharge without significant swelling/redness of eyelids or lacrimal sac

Education of Patient/Family

- Many children diagnosed with bacterial conjunctivitis actually have viral or allergic conjunctivitis. Although antibiotic eye drops may be necessary to allow a patient to resume participation in school or daycare, educating parents on the possibility of a viral etiology (which will not respond to treatment with antibiotics) or allergic etiology (which will require ongoing treatment over time) is important to prevent frustration if symptoms do not rapidly improve with topical antibiotic eye drops.
- CW does not have strict guidance on return to school/daycare for conjunctivitis.
- The majority of cases are self-limiting.
- For bacterial conjunctivitis, many schools/daycares have rules in place that children may return to school/daycare when the eye is no longer draining and they have been treated with antibiotic eye drops for at least 24 hours.
- For all cases of conjunctivitis regardless of etiology, providers should engage families in shared decision making to discuss return to normal activity. Best practice for return to activity is to focus on hand hygiene and ability to avoid close contact with others.

Follow-up

- If bacterial conjunctivitis is suspected and no improvement is noted with 2 full days of therapy
- If suspected viral conjunctivitis has not resolved within 2-3 weeks or is not starting to improve after one week.
- With any worrisome symptoms including: change in vision, worsening photophobia or foreign body sensation, clouding of the eye, ear pain, eye pain with movement.

Note:
For CMG nurse triage conjunctivitis pathway, please see Appendix B.
For CMG Evisit conjunctivitis pathway, please see Appendix C.

Amy Romashko, MD
Medical Director, CW Urgent Care

This guideline is designed to serve as a reference for clinical practice and does not represent an exclusive course of treatment nor does it serve as a standard of medical care. Providers should apply their professional judgment to the management of individual patient conditions and circumstances. Children's Hospital and Health System (CHHS) does not make any representation with respect to any sort of industry recognized standard of care for the particular subject matter of this clinical guideline. Additionally, CHHS form documents are subject to change, revision, alteration, and/or revocation without notice.

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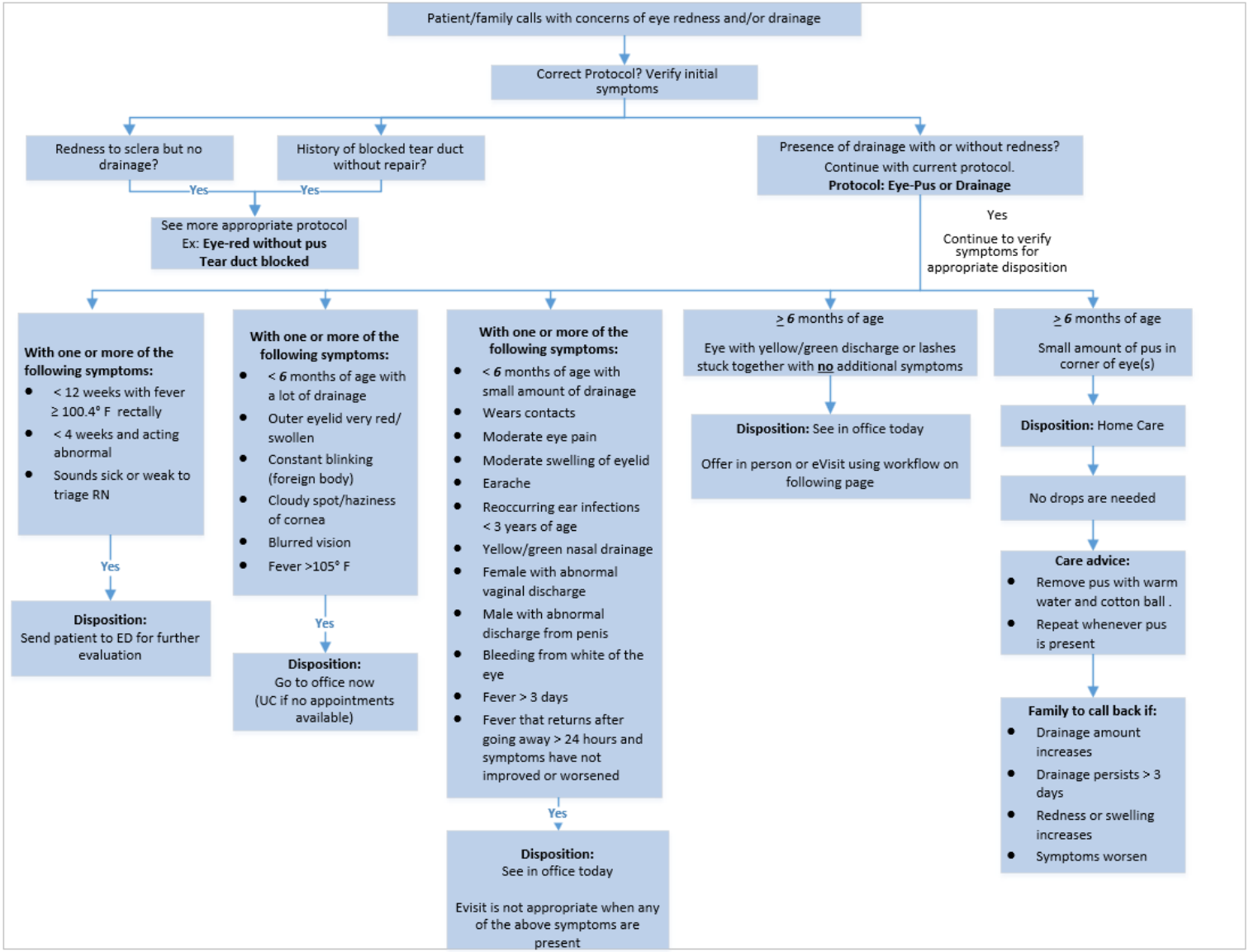
Treatment information also provided by Tracey Strombeck, OD, Optometry, Children's Wisconsin, (personal communication, August 2024).

Appendix A: History and exam findings of Nasolacrimal Duct Obstruction (NLDO)

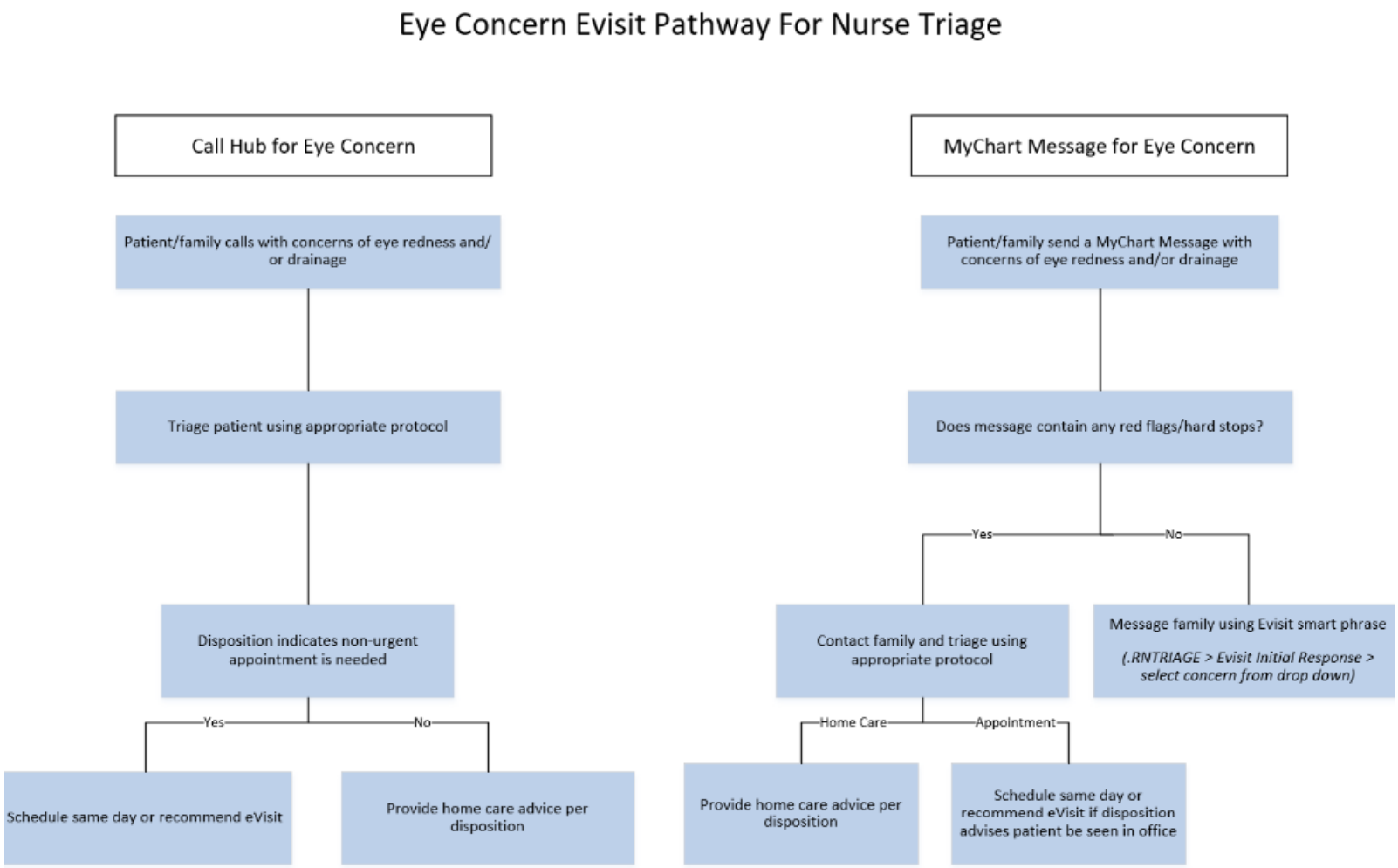
In young infants, tearing and mucoid drainage can be due to congenital nasolacrimal duct obstruction (NLDO). This is a common condition, affecting about 6% of newborns and it may be unilateral or bilateral. Resolution typically occurs in most infants by 6-10 months of age, and most primary care physicians refer patients to an ophthalmologist somewhere between 6 and 12 months of age to discuss timing of intervention as appropriate.

- Clinical presentation:
    - Tearing of the affected eye along with mattering and crusting of the eyelashes.
    - **The conjunctiva itself is not injected**, although the lower eyelid can be mildly red or irritated from rubbing at the area to remove tears and discharge.
    - Yellow, sticky mucoid discharge may be noted within the eye itself, and frequently causes much distress to parents but not the affected infant.
- Treatment:
    - Mainly supportive, with reassurance about the benign and self-limited nature of the obstruction in most infants.
    - Instruct parent/caregiver to massage the nasolacrimal duct QID
        - Use clean hands, short fingernails and apply moderate pressure over the lacrimal sac (inner canthal region of the eye) in a downward direction for two to three seconds.
        - This maneuver is thought to increase hydrostatic pressure, forcing open the obstructing membrane that is blocking the nasolacrimal duct.
- It is important to distinguish the "typical" drainage of congenital NLDO, which should not be treated with antibiotics, from bacterial overgrowth within the stagnant tear pool, which can occur in patients with NLDO and does warrant a short course of topical antibiotic eye drops. Patients with typical NLDO present with sticky, yellow drainage which, while present, is not copious. When bacterial overgrowth does occur in these patients, the drainage becomes mucopurulent.
    - Continue lacrimal duct massage
    - Warm compresses QID
    - May consider erythromycin ointment
- Infants with congenital NLDO are at risk for additional complications from infection or obstruction of the lacrimal sac. Any signs of redness or swelling of the lacrimal sac raises concern for acute dacryocystitis. These patients need urgent transfer to the EDTC and likely will need admission for IV antibiotics.

Appendix B: CMG Nurse Triage Conjunctivitis Pathway



Appendix C: CMG Evisit Conjunctivitis Pathway



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