Assessment and Diagnostic Guideline: Eyes

Registered Nurses who hold Certified Practice (RN(C)) designation in **Remote Nursing** and **RN First Call** are authorized to manage, diagnose, and/or treat the following eye conditions:

- Conjunctivitis (adults and children who are **6 months of age and older**)
- Minor Corneal Abrasion (adults and children who are **two years of age and older**)

This Guideline provides guidance to RN(C)s when conducting assessments and diagnostic tests related to eye conditions that can be managed and/or treated under the Certified Practice framework. RN(C)s maintain an RN scope of practice which is expanded in particular circumstances wherein the RN(C) is able to diagnose and treat the specific conditions listed above.

RN(C)s must ensure they complete and document their assessments according to BCCMN regulatory practice standards and their practice setting requirements. Upon arriving at a diagnosis, RN(C)s are required to consult the relevant *Care and Treatment Plans* to inform the management and treatment of the condition (per BCCNM limits and conditions for certified practice).

Note: A *consultation* refers to the RN(C) collaborating with members of the care team, such as a physician, nurse practitioner, or pharmacist, to support decision-making processes related to the diagnosis, treatment and management of the diseases, disorders, and conditions that the RN(C) are authorized to diagnose, treat and manage. A *referral* is when an RN(C) refers a patient to a medical care provider for further treatment, care or management. This occurs when patients are presenting with symptoms outside of what is provided in this document, including symptoms that require urgent referral.

Visual Summary of Guideline

1. **Eyes: Physical Assessment and Review of Systems** (pages 1-2)
   - Symptoms requiring urgent referral
   - Associated systems assessments
2. **Typical Findings of Corneal Abrasion** (page 2-3) and **Conjunctivitis** (pages 3-6)
   - Potential causes
   - Predisposing risk factors
   - History
   - Physical assessment
   - Diagnostic tests
3. **Refer to the appropriate *Care and Treatment Plan*** (page 6)
   - DST 201 - Care and Treatment Plan: Minor Corneal Abrasion
   - DST 202 - Care and Treatment Plan: Conjunctivitis

1) Eyes: Physical Assessment and Review of Systems

*Refer to *the Assessment and Diagnostic Guideline: General* as needed.

Note: Review Appendix A - Algorithm for Diagnosing the Cause of Red Eye.

Symptoms Requiring Urgent Referral

The first step is to differentiate major or serious causes of red eye from minor causes.

This *Assessment and Diagnostic Guideline* informs RN(C) practice for the diseases, disorders, and conditions that RN(C) are authorized to diagnose, treat and manage. Patients presenting with symptoms outside of what is provided in this document require referral to a physician or nurse practitioner.

Associated Systems

Ear, Nose, and Throat

- If symptoms of systemic conditions such as viral URTI (upper respiratory tract infection) are present, complete the appropriate system assessment per ENT DST 300.

Sexually Transmitted Infections

- If symptoms of systemic STI (sexually transmitted infection) are present, complete the appropriate system assessment per BC Centre for Disease Control STI DST 900. Pre-auricular adenopathy might indicate chlamydial, viral, or invasive bacterial infection of the eye (e.g., gonorrhea).

Vision Review of System Questions

See the 'Review of Systems: Eyes' section in the *Assessment and Diagnostic Guideline: General* if not done.

2) Typical Findings

Minor Corneal Abrasion

Potential Causes[1]

Usually, trauma or foreign body in the eye:

- Eye trauma
- Foreign bodies
- Improper contact lens use
- Spontaneous defects in the corneal epithelium

History[1]

- Trauma
  - History of direct trauma
  - Foreign bodies making contact with the eye
- Sudden or delayed unilateral eye pain (sharp or worse with blinking)
- Mild photophobia
- Moderate to profuse tearing
  - Mild blurred vision (due to tearing) may be present
- Foreign-body sensation
- Wearing contact lens
  - Sleeping in their contacts
  - Poor hygiene practices
  - Improper wetting solutions
  - Improper maintenance

- Difficulty with lens fit
- Exceeding recommended wear time

Key Physical Assessment Findings[1,2]

*Refer to the *Assessment and Diagnostic Guideline*: *General – Physical Assessment of Eyes* for additional considerations related to Eye exam.

Prioritizing patient comfort including darkening the room, encouraging the patient to wait with eyes closed, and avoiding rubbing the affected eye(s) can assist with the overall quality of patient experience and assessment.

A topical anesthetic, e.g. tetracaine or proparacaine [1], may be used to facilitate patient comfort during examination, after penetrating trauma is ruled out.

Note: A study of topical anesthetics used on animals showed that repetitive use can be toxic to the corneal epithelium and slow healing. It is thus recommended by UpToDate to limit the use of topical anesthetics when able.[1]

- Exclude penetrating trauma
- Vital signs normal
- Visual acuity
  - Depending on the location of the abrasion, visual acuity may be normal or diminished in the affected eye
- Assess conjunctival injection
  - Central conjunctival injection or ciliary flush often denotes a more serious problem than slight but diffuse injection
- Penlight exam: pupils equal, round, and reactive to light and accommodation (PERRLA)
- Inspect extraocular mobility by checking the range of movement
  - Should not increase pain and should be negative for double vision
- Presence of a foreign body under the upper or lower eyelid must be ruled out; evert the lids and inspect carefully
- Funduscopic exam to confirm red reflex

Note: Corneal edema is common in abrasions that have been present for over 12 hours where the patient has been rubbing or pressing the eye in response to pain. According to Jacobs (UpToDate), Corneal edema can cause the cornea to have a "hazy gray appearance rather than distinct infiltrate."[1]

Note: A rust ring may form around foreign bodies that contain iron and usually dissipates without intervention.

Additional Pediatric Considerations

- Pediatric patients may more commonly require topical anesthetic to achieve cooperation for an effective exam
- Ointment preferred over drops for children or those with poor compliance [3]

Diagnostic Tests[1]

Apply fluorescein stain to test for corneal integrity if there is a possibility that a corneal abrasion has occurred.

Corneal cells that are damaged or lost will stain green. Using cobalt blue light allows easier visualization of the abrasion.

Conjunctivitis

*Refer to Appendix B: Visual Algorithm for Diagnosing Conjunctivitis.

Potential Causes[3]

- Viral Conjunctivitis

- Bacterial Conjunctivitis
- Allergic Conjunctivitis: more common when accompanied by other allergic symptoms such as rhinitis
- Non-infectious, non-inflammatory conjunctivitis (usually resolves spontaneously)
- Other causes include:
  - Wearing contact lenses
  - Foreign body, acid or alkali burn to eye, including corneal injury
  - Preseptal or orbital cellulitis
  - Uveitis and glaucoma all of which are referred to a physician or nurse practitioner
  - Toxic Conjunctivitis

Common Viral Pathogens[3]

- Adenovirus (most common cause, including many serotypes)
- Herpes simplex virus (HSV)
- Varicella zoster / Herpes zoster ophthalmicus (VZV)

Common Bacterial Pathogens[3]

- *Haemophilus influenzae* (non-typable)
- *Streptococcus pneumoniae*
- *Staphylococcus aureus*
- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*
- *Moraxella catarrhalis*

Additional Pediatric Considerations

- Bacterial conjunctivitis is more common in children. Findings include mucopurulent discharge and eyelids potentially matted shut[4]

Types of Allergic Conjunctivitis[5]

- Acute allergic conjunctivitis
- Seasonal allergic conjunctivitis (SAC)
- Perennial allergic conjunctivitis (PAC)

Key Physical Assessment Findings[2,3]

*Refer to the *Assessment and Diagnostic Guideline: General* as needed for specifics of advanced practice eye exam.

Examination should be very brief in the case of a chemical injury to the eye as irrigation of the eye is a priority and should begin immediately. A topical anesthetic, e.g., tetracaine, may be used if the examination is uncomfortable for the patient.

- Visual acuity is normal
- Inspect eyelids and orbits for crusting, edema, ulceration, nodules, discoloration, inversion of eyelashes, papillary reaction
- Inspect the conjunctiva for erythema, edema, discharge, foreign bodies, phlyctenules (white granules on corneal edge surrounded by erythema) or other abnormalities
- Note the pattern of injection, such as conjunctival hemorrhage or ciliary flush
- Penlight exam: pupils equal, round, reactive to light and accommodation (PERRLA)

- Examine the anterior segment of the globe with a small penlight
- Inspect extraocular mobility by checking the range of movement
- Palpate the bony orbit, eyebrows, lacrimal apparatus and pre-auricular lymph nodes for tenderness, swelling or masses

Note: in cases where chemical injury is identified and treatment has been initiated, contacting BC Poison Control is advised for further treatment and chemical-specific recommendations.

Bacterial Conjunctivitis – History[3,4]

- Eye(s) red, often unilateral initially, may spread to both eyes
- Burning, gritty sensation or foreign body sensation in eyes
- Thick, purulent and recurrent discharge with crusting
- Complicating bacterial infections, such as otitis media, may be evident
- Recent contact with others with similar symptoms
- Recent sexual activity and possible STI

Bacterial Conjunctivitis– Common Findings[3,4]

- Conjunctiva erythematous (unilateral or bilateral)
- Chemosis (swelling of conjunctiva) if severe
- Thick, purulent discharge that continues to occur throughout the day
- PERRLA
- Visual acuity normal
- Pre-auricular nodes palpable in ocular Gonorrhea, Chlamydia, and MRSA infection

Viral Conjunctivitis – History[3,4]

- Acute onset of conjunctival injection commonly preceded by a viral upper respiratory tract infection
- May begin unilateral, but often bilateral within 24-48 hours
- No pain, mild to stabbing pain.
- Potentially gritty sensation or mild itching
- Tearing or mucoid discharge
- Systemic symptoms may be present (e.g., sneezing, runny nose, sore throat, preauricular lymphadenopathy)
- Recent contact with others with similar symptoms

Viral Conjunctivitis – Common Findings[3,4]

- Conjunctiva erythematous (unilateral or bilateral)
- Chemosis and eyelid edema (swelling of the conjunctiva due to non-specific irritation) if severe
- Watery or mucoid discharge
- PERRLA
- Visual acuity: normal
- Swollen eyelids
- Enlarged, tender preauricular nodes Lasts 1-4 days; infectious for 10-12 days from onset as long as the eyes are red
- Dendritic keratitis on fluorescein staining with herpes simplex virus

Allergic Conjunctivitis – History[3]

- Acute, Seasonal, or Perennial history of conjunctivitis
- Known, or environmental allergies, allergic rhinitis
- Eczema, asthma, urticaria
- Bilateral watery, red, itchy eyes, without purulent drainage

Allergic Conjunctivitis – Common Findings[3,5]

- Sequential bilateral red eyes
- Watery discharge and inflammation around the eye and eyelids, which can produce dramatic conjunctival swelling (chemosis) and lid edema, to the extent that the eye is swollen shut
- A feeling of grittiness or stabbing pain
- May have rhinorrhea or other respiratory symptoms
- Crusting of the lashes overnight can sometimes be confused for a purulent discharge
- Enlarged, tender pre-auricular lymph nodes are often present/a useful feature to assist in diagnosis
- PERRLA
- Visual acuity normal
- Acute allergic conjunctivitis (AAC):[5]
  - Often related to a known allergen
  - Sudden onset and intense reaction
- Generally, resolves within 24hrs once exposure has stopped
- Seasonal allergic conjunctivitis (SAC):
  - Often associated with rhinitis and associated with increased outdoor airborne pollens
  - Less urgent onset, developing over days to weeks
  - Predictable course associated with specific pollen seasons
- Perennial allergic conjunctivitis (PAC):
  - Mild and chronic conjunctivitis that comes and goes throughout the year, commonly secondary to indoor allergens including dust, animal dander, and mold.

Diagnostic Tests[3]

The RN(C) may consider the following diagnostic tests in the examination of the eye to support clinical decision-making:

- Swab drainage for Culture and Sensitivity (C&S) if there is no resolution of symptoms after an empiric course of treatment.
- Swab for gonorrhea or chlamydia, if history indicates concern.

3) Refer to the Appropriate Care and Treatment Plan

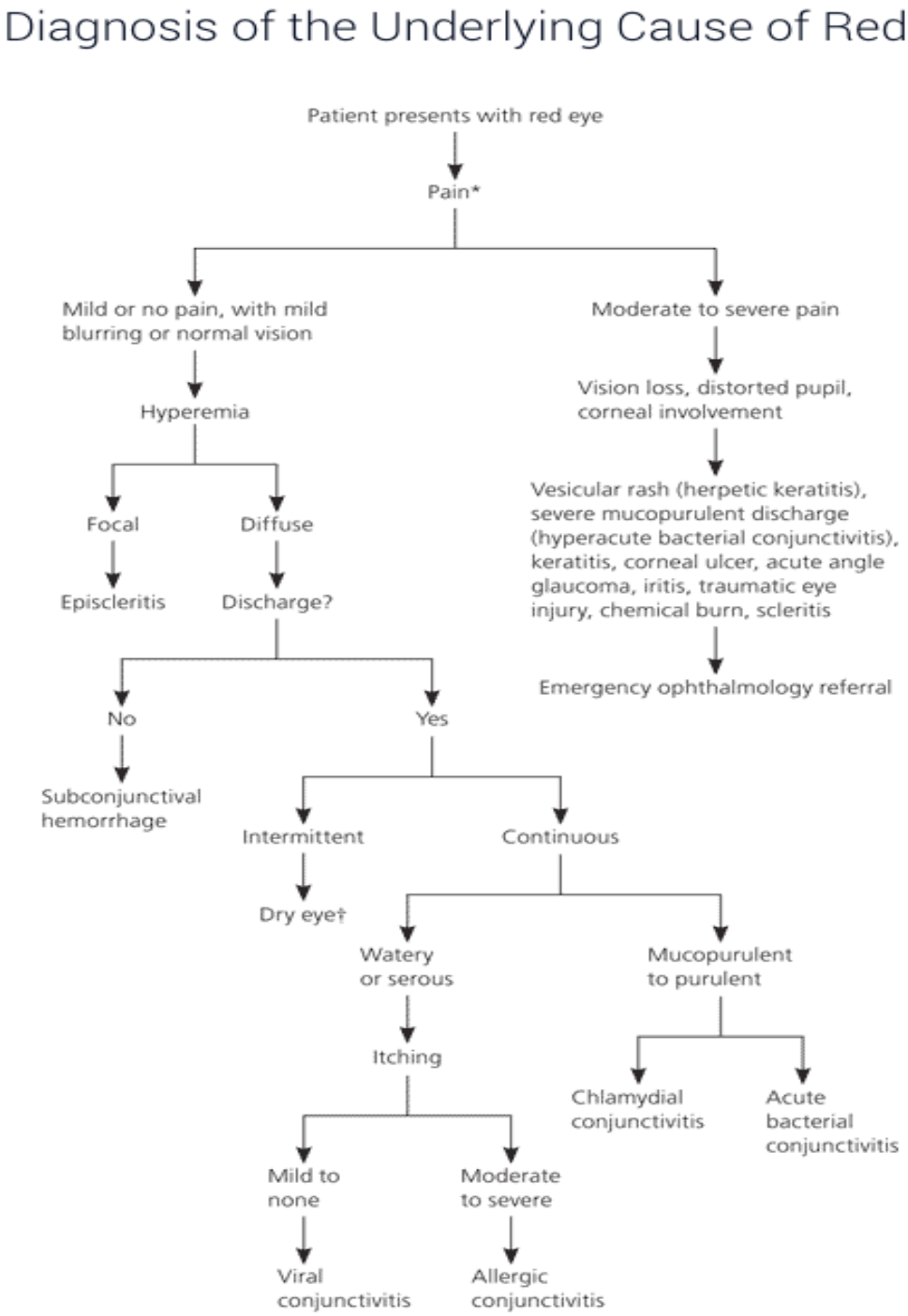
Based on the differential diagnosis established with assessment and diagnostic tests above, proceed to the appropriate care and treatment plan:

- **DST 201** - Care and Treatment Plan: Minor Corneal Abrasion
- **DST 202** - Care and Treatment Plan: Conjunctivitis

References

1. Jacobs DS. Corneal abrasions and corneal foreign bodies: Clinical manifestations and diagnosis. UpToDate. May 24, 2024. https://www.uptodate.com/contents/corneal-abrasions-and-corneal-foreign-bodies-clinical-manifestations-and-diagnosis
2. Ball JW, Dains JE, Flynn JA, Solomon BS, Stewart RW, eds. Eyes. In: *Seidel's Guide to Physical Examination: An Interprofessional Approach*. 10th ed. Elsevier; 2023:408-449.
3. Jacobs DS. Conjunctivitis. UpToDate. July 18, 2024. https://www.uptodate.com/contents/conjunctivitis
4. Winters S, Frazier W, Winters J. Conjunctivitis: Diagnosis and Management. *Am Fam Physician*. 2024;110(2):134-144. https://pubmed.ncbi.nlm.nih.gov/39172671/
5. Hamrah P, Dana R. Allergic conjunctivitis: Clinical manifestations and diagnosis. UpToDate. March 22, 2024. https://www.uptodate.com/contents/allergic-conjunctivitis-clinical-manifestations-and-diagnosis
6. Cronau H, Kankanala RR, Mauger T. Diagnosis and management of red eye in primary care. *Am Fam Physician*. 2010;81(2):137-144.

Appendix A - Algorithm for Diagnosing the Cause of Red Eye



Cronau H, Kankanala RR, Mauger T. Diagnosis and management of red eye in primary care. *Am Fam Physician*. 2010;81(2):137-144.

Appendix B - Visual Algorithm for Diagnosing Conjunctivitis

TABLE 3

Distinguishing Features of Most Common Types of Conjunctivitis

Feature	Viral	Allergic	Bacterial
Associated history	Recent contact with another person with red eye	Allergic rhinitis, atopy	Eyelids stuck together on awakening
Discharge	Serous	Serous	Mucopurulent
Laterality	Sequential	Bilateral	Unilateral or bilateral
Predominant age group	Adults	Adults	Children
Predominant symptom	Erythema	Pruritus	Discharge
Specific examination findings	Coexisting pharyngitis; preauricular lymphadenopathy; eye no longer appears red at 20-ft distance	Periorbital hyperpigmentation (allergic shiner)	Coexisting otitis media; complete redness of conjunctival membrane obscuring tarsal vessels
Common time of year for occurrence	Summer, fall	Spring, summer, fall	Winter, spring

Information from references 1, 2, 7, 8, 10, and 17-21.

Winters S, Frazier W, Winters J. *Conjunctivitis: Diagnosis and Management*. Vol 110.; 2024.