Care and Treatment Plan: Minor Corneal Abrasion – *Adult and Pediatric* (DST 201)

Definition

A minor abrasion is a superficial corneal defect due to scraping or rubbing of the corneal epithelium. Corneal abrasions occur in any situation that causes epithelial compromise.[1]

Registered Nurses with **Remote Nursing** or **RN First Call** Certified Practice designation (RN(C)) are authorized to manage, diagnose, and treat adults and children with minor corneal abrasions who are **2 years of age and older.**

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.

Management and Intervention

*Refer to Appendix A – Management Algorithm for Corneal Abrasions

Goals of Treatment[1–3]

- Preserve vision
- Prevent secondary bacterial infection
- Prevent the development of corneal ulceration
- Pain management

Non-pharmacologic Intervention[2,3]

- Removal of the foreign body with irrigation under direct visualization or a swab
- Darken the room and encourage the patient to wait with eyes closed and to avoid rubbing the affected eye(s)
- Do not use contact lenses until the abrasion is healed and antibiotic treatment is finished
- Patching is contra-indicated unless advised by a physician or nurse practitioner

Pharmacologic Intervention[2–5]

A topical anesthetic, e.g., tetracaine or proparacaine[1], may be used if the examination is uncomfortable for the patient. The topical anesthetic often causes an initial increase in discomfort; however, irritation and foreign-body sensation should resolve in 1- or 2 minutes post-administration.

Ongoing analgesics for mild to moderate pain for adults:

- Acetaminophen 325mg, 1-2 tabs PO q4-6h PRN[6], or
- Ibuprofen 200mg, 1-2 tabs PO q4-6h PRN[7]

Note: Clients are typically not discharged with topical anesthetics for pain control as they can be toxic to the epithelium and retard healing, increasing the risk of infections and scarring. However, a newer meta-analysis found that topical NSAID use may reduce the need for oral analgesia without complications.[8]

Note: Corneal abrasions should **never** be treated with topical steroids or steroid antibiotic combinations as they slow healing and increase the risk of superinfection.

Note: Tetanus prophylaxis is not recommended unless there is a penetrating injury into the eye, chemical burn, devitalized tissue, or trauma from contaminated material.

Topical antibiotics are recommended treatment for all corneal abrasions; however, some low-risk cases may be managed without antibiotics if close daily observation is possible.

- Low-risk cases include those not associated with contact lens use, not over the central cornea, and not caused by a foreign body

Antibiotic Therapy Options: Non-contact wearers:[2,3]

*Refer to Appendix B for an extended chart of topical antibiotics used for Corneal Abrasion.

These selections reflect commonly available options:

- Erythromycin 0,5% ophthalmic ointment, 1.25cm ribbon, QID, for 3 to 5 days, or
- Trimethoprim-polymyxin B 0.1%-10,000 units/mL ophthalmic solution, 1 drop, QID, 3 to 5 days.

Antibiotic Therapy Options: Contact wearers:[2,3]

*Refer to Appendix B for an extended chart of topical antibiotics used for Corneal Abrasion.

These selections reflect commonly available options:

- Ciprofloxacin 0.3% ophthalmic ointment, 1.25cm ribbon, QID, for 3 to 5 days, or
- Tobramycin 0.3% ophthalmic ointment, 1.25cm ribbon, BID or TID, for 3 to 5 days, or
- Gentamicin 0.3% ophthalmic ointment, 1.25cm ribbon, BID or TID, for 3 to 5 days

Note: Ointments are preferred over drops as they also act as a lubricant.

Additional Pediatric Considerations [2]

- Weight required for all oral drug calculations
- Analgesics for mild to moderate pain for pediatrics:
  - Acetaminophen
  - Ibuprofen
- Weight-based pediatric doses should not exceed recommended adult doses

Pregnant and Breastfeeding Clients[7,9,10]

When administering, dispensing or prescribing a medication to an individual who is pregnant or breastfeeding, RN(C)s are encouraged to consult with interdisciplinary team members such as a pharmacist, physician or nurse practitioner as risks and benefits of medication use may vary depending on patient-specific considerations. The considerations noted here are restricted to medications that are directly contraindicated.

- Topical analgesia and lubricants, as well as acetaminophen may be used as listed above
- Ibuprofen is not recommended for pregnant clients, particularly after 20 weeks gestation[7]
- Ciprofloxacin is contraindicated for **breastfeeding** clients
- Tobramycin and Gentamicin are contraindicated for **pregnant** clients

Potential Complications[3]

- Corneal ulceration
- Secondary bacterial infection
- Corneal scarring if abrasion recurs
- Uveitis
- Iritis

Client/Guardian Education/Discharge Information[2,3]

- Advise on condition, timeline of treatment and expected course of disease process
    - Promptly treated small corneal abrasions typically heal without complications in less than 5 days
- Advise the client that daily follow-up is important to ensure proper healing
- Counsel the client/guardian(s) about appropriate use of medications (type, dose, frequency, side effects)
- Counsel the clients/guardian(s) about when they should return to work or school.
- Instruct client/guarding to return to clinic immediately if pain increases, if vision changes before 24-hour follow-up and if any signs of infection appear including swelling, discharge, or increased redness
- Client should return if there are changes such as flashes of light, floaters, a dark veil or vision loss
- Suggest that the client wear protective glasses while working or participating in contact sports, to help prevent similar incidents in future
- Do not wear contact lens(es) until healed

Monitoring and Follow-up[2,3]

- Follow-up at 24 hours to assess healing
    - If no ongoing symptoms or signs, follow-up up no longer required
    - If epithelial abrasion is larger than the initial assessment at 24-hour reassessment, specialty referral is required
- Follow up required daily for larger abrasions, abrasions from contact lenses, abrasions with decreased vision and abrasions in young children

Additional Pediatric Considerations[2]

- Follow-up daily until healed

Consultation and/or Referral[2]

- RN(C)s should consider consultation or referral when they are unable to meet the acting within autonomous scope of practice standard.
- Refer patient to physician or nurse practitioner if:
    - a penetrating corneal ulcer is found on initial examination
    - the abrasion is greater than 4mm
    - the abrasion is located in the center of the cornea
    - pain is severe
    - pupils are not round
    - the abrasion is larger after 24 hours
    - a residual rust ring is evident
    - there is a significant worsening of vision in more than 2 lines on the Snellen chart exam (e.g., 20/20 to 20/60)

Additional Pediatric Considerations

- Children under 2 years of age must be referred
- Referral to an optometrist, nurse practitioner or physician is required within 24 hours for large or central defects and in 48-72 hours if there is no response to therapy
- According to UpToDate,[2] "an infant or child with persistent discharge or unwillingness to keep the eye open beyond 24 hours after the injury should be evaluated by an ophthalmologist because these findings suggest a retained foreign body, poor healing, superinfection, or infectious keratitis"

Documentation

According to agency policy and BCCNM standards.

References

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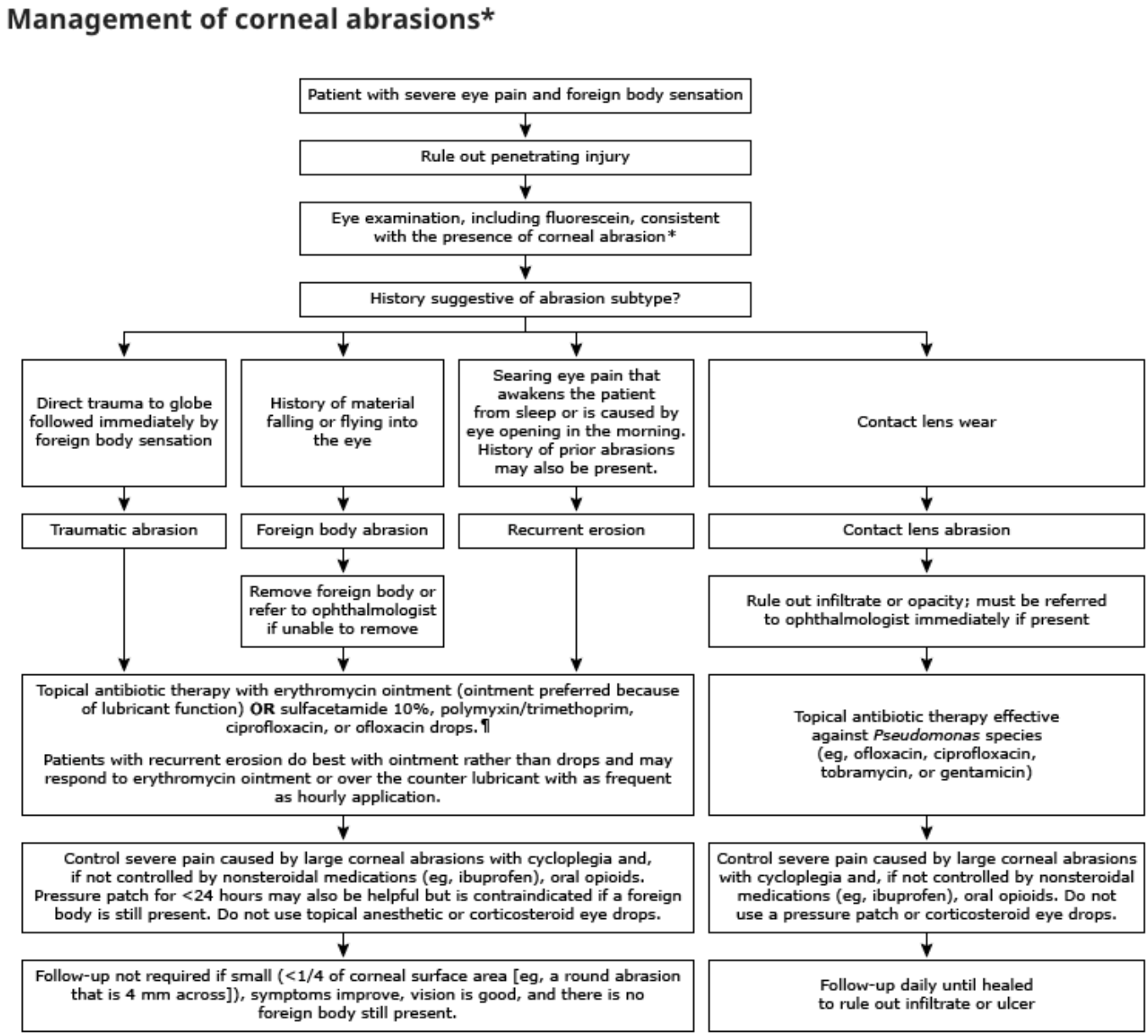
Appendix A – Management Algorithm for Corneal Abrasions



Jacobs DS. Corneal abrasions and corneal foreign bodies: Management. UpToDate. April 22, 2024. https://www.uptodate.com/contents/corneal-abrasions-and-corneal-foreign-bodies-management

Appendix B – Antibiotic Options for Treatment of Corneal Abrasion

Medication	Brand name(s)	Dose
Topical antibiotics*		
Erythromycin 0.5% ophthalmic ointment	Ilotycin, Romycin, Diomycin	0.5 inch (1.25 cm) ribbon, four times per day for three to five days
Trimethoprim-polymyxin B 0.1%-10,000 units/mL ophthalmic solution	Polytrim, PMS-Polytrimethoprim	1 drop, four times per day for three to five days
Sulfacetamide 10% ophthalmic ointment¶	Generic only	0.5 inch (1.25 cm) ribbon, four times per day for three to five days
Sulfacetamide 10% ophthalmic solution¶	Bleph-10, Diasulf, Sulamyd	1 to 2 drops, four times per day for three to five days
Antipseudomonal topical antibiotics* (preferred in contact lens wearers)		
Ciprofloxacin 0.3% ophthalmic ointment	Ciloxan, Ciprodar ointment	0.5 inch (1.25 cm) ribbon, four times per day for three to five days
Ciprofloxacin 0.3% ophthalmic solution	Ciloxan, Ciprodar solution	1 to 2 drops, four times per day for three to five days
Ofloxacin 0.3% ophthalmic solution	Ocufloxm Exocin	1 to 2 drops, four times per day for three to five days
Tobramycin 0.3% ophthalmic ointment	Tobrex, Tobral	0.5 inch (1.25 cm) ribbon, two to three times per day for three to five days
Tobramycin 0.3% ophthalmic solution	Tobrex, Tobral	1 to 2 drops, four times per day for three to five days
Gentamicin 0.3% ophthalmic ointment$^{\Delta}$	Gentak, Garamycin ointment	0.5 inch (1.25 cm) ribbon, two to three times per day for three to five days
Gentamicin 0.3% ophthalmic solution$^{\Delta}$	Garamycin, Gentocin	1 to 2 drops, four times per day for three to five days

Jacobs DS. Corneal abrasions and corneal foreign bodies: Management. UpToDate. April 22, 2024. https://www.uptodate.com/contents/corneal-abrasions-and-corneal-foreign-bodies-management