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Conjunctivitis is an inflammatory disease characterized by conjunctival erythema, swelling, and discharge.\textsuperscript{1} Ophthalmia neonatorum is an acute, mucopurulent infection that occurs within the first 4 weeks of life.\textsuperscript{1} It is caused by chemical, bacterial, or viral processes and affects 1.6\% to 12\% of all newborns.\textsuperscript{1} Sexually transmitted bacteria account for up to 40\% of all cases of ophthalmia neonatorum in Canada.\textsuperscript{1}

Although \textit{Chlamydia trachomatis} is currently the most common organism causing ophthalmia neonatorum in North America, complications from gonococcal ophthalmia are more severe, appear more rapidly, and are more likely to cause corneal scarring, ocular perforation and blindness within 24 hours.\textsuperscript{1} In the absence of adequate prophylaxis, the transmission rate for gonorrhea from an infected woman to her newborn is 30 to 42\%.\textsuperscript{1}

Neonatal eye prophylaxis was introduced by Credé in 1881 at a time when the maternal infection rates were high and there was no effective treatment for gonococcal ophthalmia. Credé found that routine treatment with topical 2\% silver nitrate led to a dramatic reduction in the incidence of blindness caused by gonococcal ophthalmia.\textsuperscript{1} The discovery of antibiotics, prenatal screening and treatment of maternal sexually transmitted infections has had a dramatic effect on the prevention of neonatal gonococcal ophthalmia.\textsuperscript{2}

Many western countries abandoned prophylaxis in the 1960s in favor of monitoring, swabbing suspicious discharges, and treating with appropriate solutions as required.\textsuperscript{3} As of January 2000, gonococcal ophthalmia neonatorum was removed from national surveillance in Canada due to the low incidence.\textsuperscript{7} However, in British Columbia (BC), the incidences of gonorrhea and chlamydia in the population are not decreasing, but instead have been rising steadily since 1998. The 2013 rates for women age 20 to 24 in BC are 85.9 per 100,000 for gonorrhea and 1793.7 per 100,000 for chlamydia.\textsuperscript{4}

In British Columbia, the Health Act Communicable Disease Regulation (2013) requires that “a physician, or other qualified person, assisting at the birth of a baby must, within one hour of the birth, treat the eyes of the baby with a prophylactic solution of 1\% tetracycline, 0.5\% erythromycin, or 1\% silver nitrate dispensed in single use containers.”\textsuperscript{5} The US Preventive Services Task Force (2011) found no new substantial evidence on the benefits and harms of ocular prophylaxis in newborns, and therefore reaffirms its recommendation that all newborns receive ocular prophylaxis to prevent gonococcal ophthalmia neonatorum.\textsuperscript{6}

On advice of the Canadian Paediatric Society (CPS)\textsuperscript{7}, Perinatal Services BC (PSBC) is leading work to repeal this law. In the interim, while awaiting such a change, providers could meet both the professional and ethical obligation posed by the CPS recommendation and the legal obligation under the Communicable Disease Regulation by counseling parents-to-be, in advance of delivery, of the risks and benefits of the CPS recommendation and their ability to decline the ocular prophylaxis.

The CPS 2015 recommendations\textsuperscript{7} include screening and treatment of pregnant women and managing newborns exposed to Neisseria gonorrhea and Chlamydial trachomatis.
Clinical Significance

Infectious causes must be distinguished from other causes such as blocked tear ducts and exposure to chemicals or other irritants.7

Ophthalmia neonatorum can be classified into four groups: chemical conjunctivitis, non-sexually transmitted bacteria, sexually transmitted bacteria and viral conjunctivitis.1

- Chemical (self-limiting condition that does not require diagnostic tests or treatment)
- Non-sexually transmitted bacteria account for 30 to 50% of all cases of ophthalmia neonatorum.
  - Staphylococcus species
  - Streptococcus species
  - Haemophilus species
  - Other gram negative bacterial species
- Sexually transmitted bacteria
  - Chlamydial trachomatis (accounts for up to 40% of all cases in Canada1)
  - Neisseria gonorrhoeae (now accounts for less than 1% of reported cases in Canada1)
- Viral
  - Herpes simplex
  - Adenovirus
  - Enteroviruses

Chlamydia Conjunctivitis in a newborn male

Swelling and purulent drainage are characteristic of gonococcal ophthalmia neonatorum.
www.pediatricsconsultantlive.com/articles/gonococcal-conjunctivitis
Newborns delivered by cesarean section to a woman with intact membranes are extremely unlikely to contract ophthalmia neonatorum.\(^3\) The following list of maternal risk factors are associated with an increased risk of ophthalmia neonatorum:

- Presence of active cervical or vaginal infection\(^8\)
- Prelabour rupture of the membranes\(^8\)
- Traumatic or assisted vaginal delivery\(^8\)
- No prenatal care\(^6\)
- Suspected, documented, or history of sexually transmitted disease\(^6\)
- High risk sexual behavior or multiple sexual partners during pregnancy\(^6\)
- Substance use\(^6\)

### Eye Prophylaxis Administration

Under the British Columbia Health Act Communicable Disease Regulation (2013)\(^5\), a physician, midwife, or other qualified person assisting at the birth of a baby must, within one hour of the birth, treat the eyes of the baby with a prophylactic solution of 1% tetracycline hydrochloride, 0.5% erythromycin or 1% silver nitrate dispensed in single use containers.\(^5\) Erythromycin 0.5% ointment is the agent currently used in Canada.

It is important to note that erythromycin 0.5% ointment does not prevent ophthalmia neonatorum caused by Chlamydial trachomatis.\(^1\)

### Procedure to Administer 0.5% Erythromycin Ointment

1. To prevent cross contamination, collect a single-use tube of 0.5% erythromycin.
2. Before administration, wipe each eyelid gently with sterile cotton to remove foreign matter and to permit adequate eversion of the lower lid.\(^7\)
3. Apply a line of 0.5% erythromycin ointment into the lower conjunctival area, sufficiently long to cover the whole lower conjunctival area. Care is needed to prevent injury to the eye or the eyelid from the tip of the tube.\(^7\)
4. Gently massage the closed eyelids to help spread the solution to all areas of the conjunctiva.\(^7\)
5. After 1 minute any excess ointment or drops should be gently wiped from the eyelids and surrounding skin with sterile cotton.\(^7\)
6. For those very premature newborns whose lids are fused at the time of birth, apply the prophylactic agent without separating the eyelids. Treatment for these newborns is still required as the eyes may not be completely fused, nasopharyngeal colonization can occur and ointment absorption through immature skin is expected.
Newborn Eye Prophylaxis and Prevention of Ophthalmia Neonatorum

Key Consideration: Refusal of Eye Prophylaxis Treatment

The British Columbia Health Act Communicable Disease Regulation (2013) states that eye prophylaxis may be declined. Information provided antenatally by the physician or midwife prior to obtaining written request from the parents (or the mother, where both parents are not available), must include the following:

1. Why the treatment is recommended.
2. What advantages should be anticipated from the treatment.
3. What problems may arise if the treatment is not given.
4. What side effects may arise from the treatment.
5. Understand the need to monitor their newborn’s eyes for discharge during the first 4 weeks of life and knows who to contact.

A sample informed refusal to treat form can be found in Appendix A.

References

Refusal of Administration of Eye Prophylaxis to the Newborn

GENERAL RELEASE FROM RESPONSIBILITY

I, ___________________________________________ (print full name of parent), the legal guardian of □ Male □ Female ________________________ (print last name of baby), refuse the administration of prophylactic Erythromycin Ointment 0.5% to my newborn’s eyes. This treatment is required under Health Act Communicable Disease Regulation B.C. Reg. 4/83, section 17: Treatment of baby’s eyes at birth.

I am aware of the potential risks of refusing this treatment and have discussed the following with my physician/midwife:

⦁ Why the treatment is recommended
⦁ What advantages should be anticipated from the treatment
⦁ What problems may arise if the treatment is not given
⦁ What side effects may arise from the treatment
⦁ The need to monitor my baby’s eyes for discharge during the first 4 weeks of life and who to contact.

In making this decision, I hereby release _______________________________ (name of facility), its employees and my treating physician/midwife for liability for any damages or losses of any kind which may result from my refusal of this treatment.

Date ______________ Signature __________________________________________

Relationship to newborn ________________________________________________

Witness ______________________________________________________________

File on newborn’s chart
While every attempt has been made to ensure that the information contained herein is clinically accurate and current, Perinatal Services BC acknowledges that many issues remain controversial, and therefore may be subject to practice interpretation.

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