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## Recommendations for Ophthalmia Neonatorum (ON) Prevention in Nova Scotia

Neonatal conjunctivitis, also known as ophthalmia neonatorum (ON), is a relatively common and usually mild illness. However, there are important exceptions to common causes of ON which must be considered as they can lead to permanent visual impairment. Thus, it is essential that health professionals are vigilant in initial and ongoing prenatal screening, communication of screening results, and the assessment and care of infants who present with ON.

Conjunctivitis during the newborn period due to *Neisseriae gonorrhoeae* (GC) is a serious condition that can cause corneal ulceration and globe perforation as rapidly as 24 hours from presentation. ON caused by *Chlamydia trachomatis* can lead to conjunctival and corneal scarring and is also associated with pneumonia. Although rare, ON from other organisms, specifically *Pseudomonas aeruginosa* and *Herpes Simplex virus*, can lead to corneal scarring, perforation or endophthalmitis.

Topical chemoprophylaxis with erythromycin to prevent neonatal conjunctivitis due to *Neisseriae gonorrhoeae* (GC) has been an accepted practice for decades. Neonatal gonococcal ophthalmia is now rare in North America and there is concern about increasing antibiotic resistance. The Canadian Paediatric Society (CPS) has recommended moving from universal newborn ocular prophylaxis to universal prenatal screening and treatment of those with positive results to eradicate infection and prevent intrapartum transmission to the newborn.

### Prenatal Screening:

The CPS position statement, *Preventing Ophthalmia Neonatorum*<sup>1</sup> (2015, reaffirmed 2018) recommends universal prenatal screening for GC and *C. trachomatis* (chlamydia) at the first prenatal visit. The Public Health Agency of Canada (PHAC) and other agencies such as the Centres for Disease Control and Prevention (CDC), also recommend first trimester screening, with repeat screening based on results and risk factors<sup>2</sup>. An evidence review by the Canadian Agency for Drugs and Technologies in Health<sup>3</sup> (CADTH) concluded universal screening at entry into prenatal care and at another time point during pregnancy provides “the most health benefits”. This, however, was recognized as a costly approach, particularly with low prevalence rates. The optimal timing for a single universal screen for GC and chlamydia has been debated by experts across Nova Scotia.

Screening and treatment require informed consent. Parturients may choose to decline and so health professionals must ensure the discussion of risk factors and potential health outcomes is clearly documented. Considering the low rates of gonococcal ON in Nova Scotia and the cost of multiple GC and chlamydia screens, Nova Scotia experts agree that a single prenatal screen for GC and chlamydia is recommended for all pregnant persons (universal prenatal screening). Screening at 35-37 weeks’ gestation, at the same time as the Group B Streptococcus (GBS) screen, is the preferred approach to maximize neonatal health. Operationally and philosophically, this aligns with

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<sup>1</sup> <https://www.cps.ca/en/documents/position/ophthalmia-neonatorum>

<sup>2</sup> <https://www.canada.ca/en/services/health/publications/diseases-conditions/guidelines-sti-recommendations-chlamydia-trachomatis-neisseria-gonorrhoeae-syphilis-2019.html>

<sup>3</sup> [https://www.cadth.ca/sites/default/files/pdf/ht0023\\_STIs\\_during\\_pregnancy.pdf](https://www.cadth.ca/sites/default/files/pdf/ht0023_STIs_during_pregnancy.pdf)

the well-accepted practice of third trimester screening for GBS. Nonetheless, screening in the first trimester to maximize health in pregnancy is also acceptable, and would be indicated if risk factors are identified. Pregnant persons at risk of acquiring STIs should be screened more than once in pregnancy (risk-based additional screening), and treated and rescreened as outlined in the provincial, CPS, and PHAC guidelines.

According to the Public Health Agency of Canada, **risk factors for acquiring STIs** include:

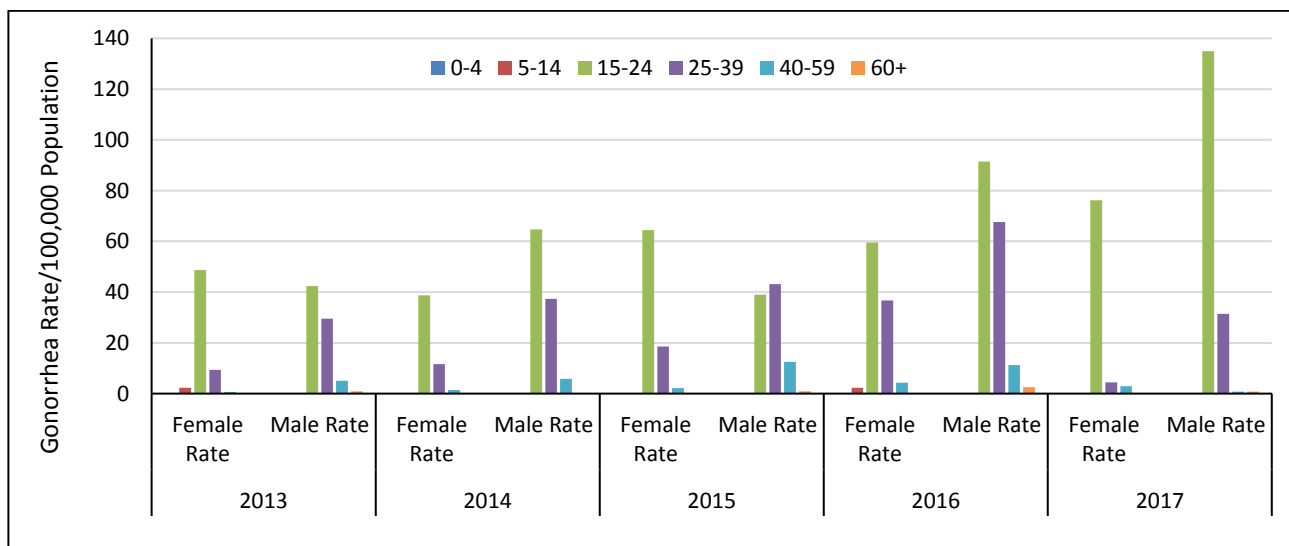
age < 25 years	previous STI diagnosis
new sexual partner	multiple or anonymous sexual partners
sexual partner(s) having a STI	condomless sex
sex while under the influence of alcohol or drugs	

The RCP, in consultation with key clinical stakeholders, recommends the following approach to preventing neonatal conjunctivitis due to GC and chlamydia:

- Offer screening with informed consent for GC and *C trachomatis* to all pregnant persons and ensure that the results will be available to newborn care providers at the time of birth.
  - The optimal timing and frequency of prenatal screening for GC and chlamydia will be directed by clinical judgment in consideration of the risk factors associated with individual patients.
  - Based on expert opinion in Nova Scotia, for optimal prevention of ON, screen low-risk parturients between 35-37 weeks' gestation. Screen those with risk factors in first trimester and later in pregnancy, in accordance with CPS and PHAC recommendations (see attached algorithm).
  - An acceptable alternative is to offer universal first trimester screening, with repeat screening later in pregnancy for those with risk factors (see attached algorithm).
- Information regarding prenatal STI screening, treatment and risk factors is crucial to the well-being of the newborn, and must be available to all health care providers caring for the newborn at and following delivery. System processes may need to be revised to ensure consistent access to this information.

Prevalence of GC:

GC infection in Nova Scotia women is uncommon; highest rates in the childbearing population are in females aged 15-24 at 48.8/100,000 to 76.2/100,000 in 2013-2017 (Source: NS Department of Health and Wellness, 2019):



### Newborn Ocular Prophylaxis:

As earlier stated, topical chemoprophylaxis to prevent neonatal conjunctivitis due to *Neisseriae gonorrhoeae* (GC) has been an accepted practice for decades. In Canada, prophylaxis with erythromycin - the only option available - continues and is still required by law in some jurisdictions. In Nova Scotia, neonatal antibiotic ocular prophylaxis has been the standard of care for decades, although it is not required by law.

There is concern about increasing rates of erythromycin-resistant GC in Canada. Erythromycin is not effective in preventing milder forms of neonatal ophthalmia, i.e. those arising from organisms such as *C trachomatis* (accounts for 2%-40% of cases) or Gram negative bacteria (accounts for 30%-50% of cases). Elimination of universal newborn eye prophylaxis as recommended by the CPS necessitates that health professionals confirm that the pregnant person (i.e. parturient) has had a negative prenatal screen. The negative result could be at the initial screen regardless of timing or, for those with a positive screen, after treatment.

Screening for STIs and ocular prophylaxis require informed consent. For parturients who decline screening, health care providers must document the discussion of risks and potential health outcomes for the parturient and the infant.

The RCP, in consultation with key provincial clinical stakeholders, supports the following recommendations to prevent neonatal conjunctivitis due to GC and chlamydia:

- Refrain from ON prophylaxis when maternal GC screen results are negative at any time in pregnancy or, if positive, that there is evidence of cure (i.e. a negative screen within 3-7 days following treatment, as per provincial<sup>4</sup> and PHAC guidelines).
- Pregnant persons who screen positive for chlamydia should be treated and re-screened 3-4 weeks after completion of treatment, in accordance with provincial<sup>5</sup> and PHAC guidelines; however, there is a lack of evidence that prophylactic erythromycin prevents ON in this circumstance and so it is not indicated. The management of newborns exposed to chlamydia is addressed in the CPS Position Statement.
- If GC status during pregnancy is not known at birth, administer ON prophylaxis within an hour of birth (for potential GC exposure) and offer screening for GC and chlamydia with the most rapid test available. Arrange for parental follow-up after discharge if required.
- If maternal GC and chlamydia status is not known prior to discharge, assess follow-up plans and ensure parents/caregivers are aware of signs and symptoms of ON and the need to seek medical advice if these occur (refer to Table 1 on page 3). Rarely, prophylactic treatment of the newborn may be considered (see algorithm).
- Infants born to persons with untreated GC should be tested and treated immediately in accordance with guidelines offered in the CPS position statement, without waiting for test results.
- As part of the routine transfer of information from the birth setting, community-based primary care providers (PCPs) should be informed whether or not an infant in their care has received eye prophylaxis.
- Health care providers should be familiar with recognition, diagnosis and treatment of ON. (refer to Table 1 on page 3)

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<sup>4</sup> <https://novascotia.ca/dhw/cdpc/cdc/documents/Gonorrhoea.pdf>

<sup>5</sup> <https://novascotia.ca/dhw/cdpc/cdc/documents/Chlamydia.pdf>

**Table 1**

<b>Causative Organism:</b>	<b>Neisseria gonorrhoeae</b>	<b>Chlamydia trachomatis</b>	<b>Other causes</b>
<u>Clinical presentation:</u>			
<i>Onset (age)</i>	Within first ~4 days of birth	7-14 days of age	variable
<i>Inflammation of eyelids</i>	Extensive & excessive	minimal	minimal
<i>Corneal involvement</i>	Usual; risk of corneal ulceration or rupture	rarely	rarely
<i>Additional concerns</i>	* Acute significant mucopurulent discharge * Perforation of the globe and visual impairment	Chlamydial pneumonia	Moderate conjunctival injection and minimal mucopurulent discharge

**Recognition of ON - Look for the following:**

- Symptoms are typically bilateral
- Profound irritation and redness of the conjunctiva and eye in general
- \*Acute + significant mucopurulent discharge\*
- Excessive edema of the eyelids

There is an increased risk of infection for the examiner - ensure practice of routine practices and contact precautions.

**Management of ON:**

- Ensure an accurate diagnosis:
  - GC: Swab for gram stain and culture
  - C.trachomatis (CT): Specific CT transport swab
- Obtain urgent consultation with ophthalmologist and/or paediatrician
- Refer to treatment guidelines included in the CPS position statement

Summary:

As universal ocular prophylaxis is eliminated from routine newborn care, functions of the health system must be optimized and synchronized to prevent ON. Effective components of a system designed to prevent ON include:

- universal prenatal screening throughout a jurisdiction,
- results that are readily available to maternal birth and newborn care providers, both in-hospital and in the community,
- parent and health care provider familiarity with the signs and symptoms of ON, and
- appropriate and timely treatment that is prescribed and available to patients.

Provincial screening and treatment algorithms:

For ease of reference, algorithms have been created to represent the screening and treatment recommendations included in this document; examples in colour format are included on pages 6 and 7.

These may be downloaded from the RCP website: <http://rcp.nshealth.ca/clinical-practice-guidelines/ON-prevention-NS>

In grayscale:

- NS Antenatal ON prevention algorithm final Dec 2019 BW
- NS Intrapartum\_Postnatal ON prevention algorithm final Dec 2019 BW

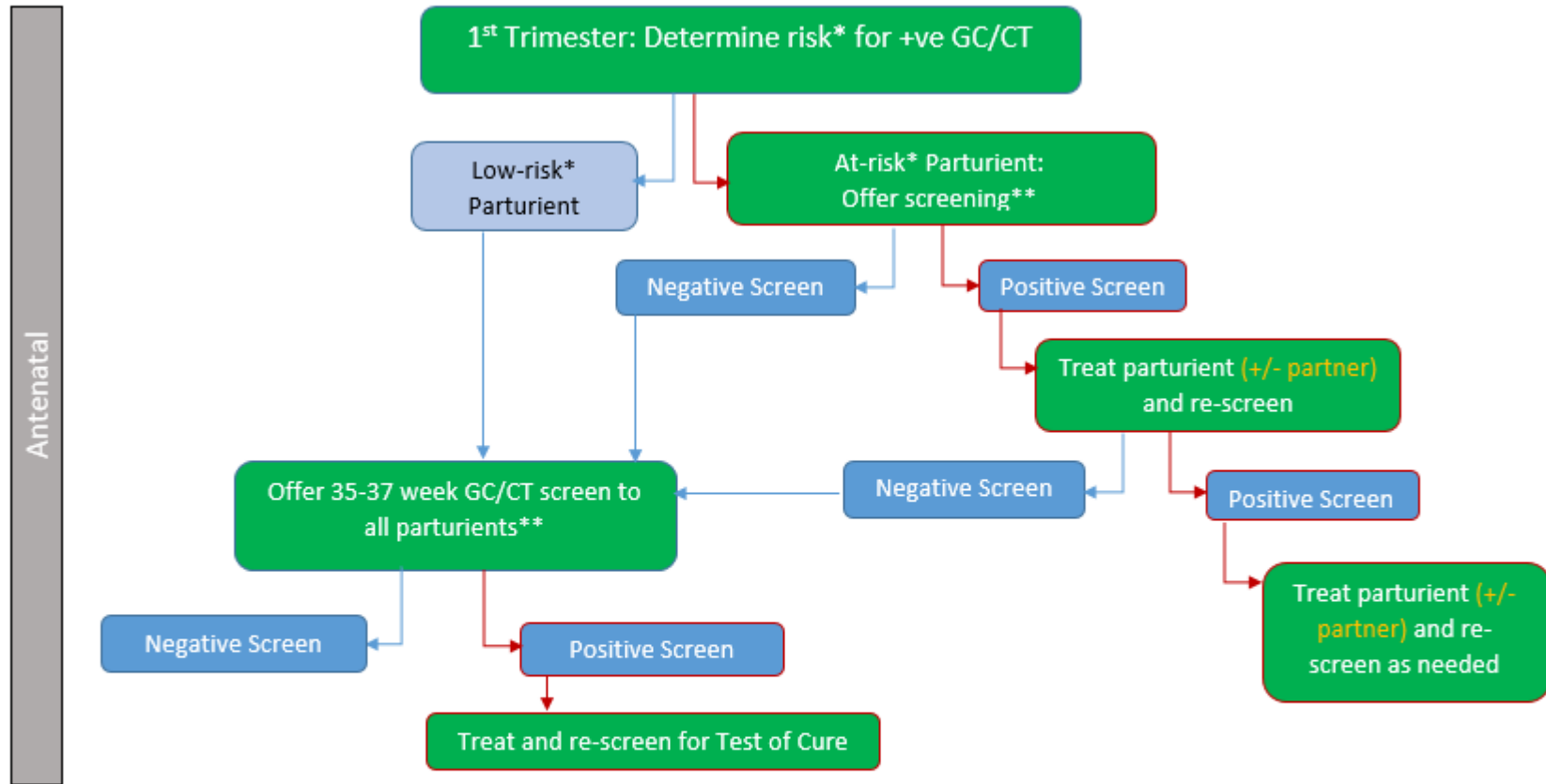
Or in colour:

- NS Antenatal ON prevention algorithm final Dec 2019 colour
- NS Intrapartum\_Postnatal ON prevention algorithm final Dec 2019 colour

Primary Health Care Practice Resource (pamphlet):

- Preventing Ophthalmia Neonatorum (Newborn Conjunctivitis)

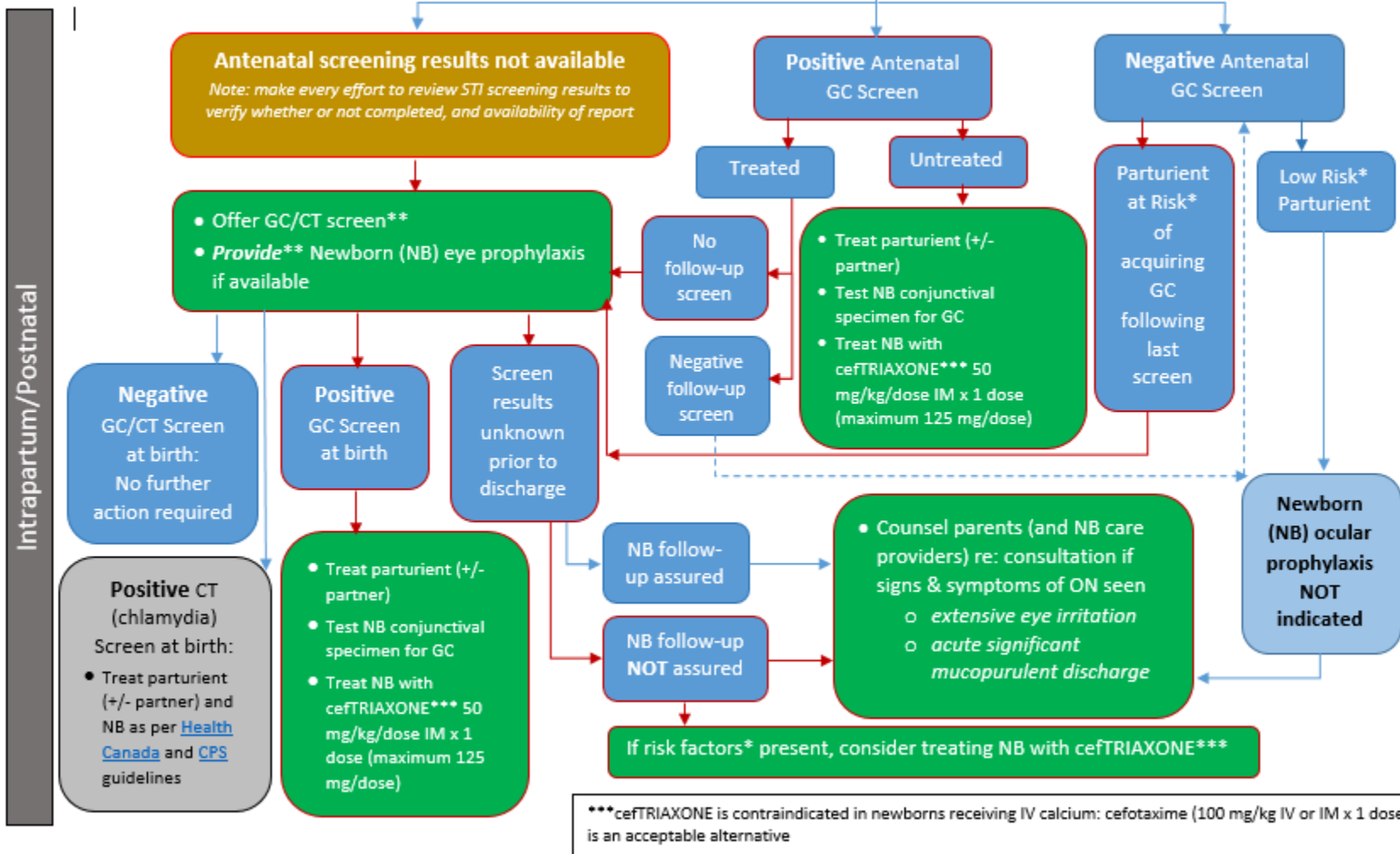
Prevention of Ophthalmia Neonatorum (ON) due to Neisseriae gonorrhoeae (GC):  
ANTENATAL Screening/Treatment



\*\* The optimal timing and frequency of antenatal screening for gonorrhea/chlamydia (GC/CT) will be directed by clinical judgment in consideration of the risk factors associated with individual patients. Screening and treatment requires informed consent. Parturients may choose to decline – ensure discussion of risk factors and potential health outcomes is clearly documented.

\*According to Public Health Agency of Canada, risk factors include age < 25 years, previous STI diagnosis, new sexual partner, multiple or anonymous sexual partners, sexual partner(s) having a STI, condomless sex, and sex while under the influence of alcohol or drugs. Discussion of/screening for risk factors can occur any time in the perinatal continuum. If a "low-risk" parturient discloses risk factors after initial screening, follow algorithm for "at-risk" parturient.

## Prevention of Ophthalmia Neonatorum (ON) due to *Neisseriae gonorrhoeae* (GC): INTRAPARTUM/POSTNATAL Screening and Treatment



\*According to Public Health Agency of Canada, risk factors include age < 25 years, previous STI diagnosis, new sexual partner, multiple or anonymous sexual partners, sexual partner(s) having a STI, condomless sex, and sex while under the influence of alcohol or drugs. Discussion of/screening for risk factors can occur any time in the perinatal continuum. If a "low-risk" parturient discloses risk factors after initial screening, or risk factors remain present following Test of Cure, follow algorithm for "at-risk" parturient.

\*\*STI screening and ocular prophylaxis requires documentation of informed consent

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