Chlamydia

- In the absence of a contraindication, the following treatment options are recommended:

Table 1. Chlamydia. Adults (non-pregnant and non-lactating): Urethral, endocervical, rectal, conjunctival infection

Preferred	Alternative
• **Azithromycin** 1 g PO in a single dose if poor compliance is expected[*] **OR** • **Doxycyline** 100 mg PO bid for 7 days	• **Levofloxacin** 500 mg PO OD for 7 days

Source: Canadian Guidelines on Sexually Transmitted Infections 2022.

[*]If vomiting occurs more than 1 hour post-administration, a repeat dose is not required.

Notes:

- In Saskatchewan azithromycin is generally the preferred treatment due to poor compliance of multiday treatments.

Table 2. Chlamydia. Children

First week of life	Infants ≤ 2000 g • **Erythromycin** 20 mg/kg/day PO in divided doses for at least 14 days[‡§] Infants > 2000 g • **Erythromycin** 30 mg/kg/day PO in divided doses for at least 14 days[‡§]
>1 week to 1 month	• **Erythromycin** 40 mg/kg/day PO in divided doses for at least 14 days[‡§]

>1 month to <9 years	• **Azithromycin** 12-15 mg/kg (max. 1 g) PO in a single dose Alternatives • **Erythromycin** 40 mg/kg/day PO in divided doses (max. 500 mg qid for 7 days or 250 mg qid for 14 days) ‡§ **OR** • **Sulfamethoxazole** 75 mg/kg/day PO in divided doses (max. 1 g bid) for 10 days§
9-18 years	Preferred • **Doxycycline** 5 mg/kg/day PO in divided doses (max. 100 mg bid) for 7 days **OR** • **Azithromycin** 12-15 mg/kg (max. 1 g) PO in a single dose if poor compliance is expected Alternatives‡§ • **Erythromycin** 40 mg/kg/day PO in divided doses (max. 500 mg qid for 7 days or 250 mg qid for 14 days) **OR** • **Sulfamethoxazole** 75 mg/kg/day PO in divided doses (max. 1 g bid) for 10 days

Source: Canadian Guidelines on Sexually Transmitted Infections 2022.

†Test of cure should be performed 4 weeks after the completion of treatment in prepubertal children.
‡Erythromycin dosages refer to the use of erythromycin base. Equivalent dosages of other formulations may be substituted.
§If erythromycin or sulfamethoxazole has been used for treatment, repeat testing after completion of therapy is advisable.

Notes:

- Neonates born to infected mothers must be tested for *C. trachomatis.* Neonates should be treated if their test results are positive. They should be closely monitored for signs of chlamydial infection (e.g., conjunctivitis, pneumonitis). Prophylaxis is not recommended unless follow-up cannot be guaranteed.

Additional Information Regarding Treatment

- Topical therapy alone for conjunctivitis is NOT adequate and is unnecessary when systemic treatment is used.
- The use of erythromycin in infants under 6 weeks of age has been associated with infantile hypertrophic pyloric stenosis (IHPS). The risk of IHPS with other macrolides (e.g., azithromycin, clarithromycin) is unknown. The risks and benefits of using erythromycin in such infants must be explained to parents. When erythromycin is used in such infants, it is important to monitor for signs and symptoms of IHPS. IHPS following erythromycin use should be reported to the Canadian Adverse Drug Reaction Monitoring Program at 1-866-234-2345.
- The need to treat infants under 6 weeks for *C. trachomatis* can be avoided by screening pregnant women and treating before delivery.
- Doxycycline is contraindicated in children less than 9 years of age.
- Quinolones have been associated with articular damage in young animals. Such joint changes have not been clearly attributable to quinolone use in children. Its safety in children has not been established. Quinolones should not be used in prepubertal patients. Experience in pubertal patients under 18 years of age is limited.

Table 3. Chlamydia. Pregnant women and nursing mothers: Urethral, endocervical, rectal infection

- **Amoxicillin** 500 mg PO tid for 7 days
  OR
- **Azithromycin** 1 g PO in a single dose, if poor compliance is expected[‡]

Source: Canadian Guidelines on Sexually Transmitted Infections 2017.

[‡]If vomiting occurs more than 1 hour post-administration, a repeat dose is not required.

Notes:

- Test of cure should be performed 4 weeks after the completion of treatment in all pregnant women.

Revisions

Date	Change
September 2023	• Removed reference to Erythromycin as an alternate treatment for adults due to discontinuation of Erythromycin 333 mg capsules (ERYC) by the sole Canadian manufacturer.

	• Changed Ofloxacin to Levofloxacin in alignment with the Canadian Guidelines on Sexually Transmitted Infections

Gonorrhea

Antimicrobial resistant gonorrhea (AMR-GC) continues to be of concern in Canada and globally. In order to determine the most appropriate treatment individuals must be assessed for the following specific risk factors and sexual behaviours prior to being treated for gonorrhea:

- history of MSM (men who have sex with men),
- history of oral sex,
- history of anal sex,
- sex with a person outside of Saskatchewan or Canada.

Treatment with the following MUST be given if the patient answers yes to any of the identified risk factors **OR** if the assessment is not completed:

- Ceftriaxone 250 mg IM (lidocaine 1% is the preferred diluent); AND
- Azithromycin 1 gram orally.

The following treatment is only appropriate when the above risk factors have been ruled out:

- Cefixime 800 mg orally; AND
- Azithromycin 1 gram orally.

In the absence of a contraindication, the following tables outline treatment options that should be considered in conjunction with the above guidelines.

Anogenital and Pharyngeal Infections

Table 1. Gonorrhea. Recommended treatment of uncomplicated anogenital and pharyngeal infection in adults and youth 9 years of age and older (for MSM, see Table 2)

Urethral, endocervical, vaginal, rectal	
Preferred	**Alternatives**
• Ceftriaxone 250 mg IM in a single dose[*†] **PLUS** • Azithromycin 1 g PO in a single dose[‡] **OR** • Cefixime 800 mg PO in a single dose[*§] **PLUS** • Azithromycin 1 g PO in a single dose[‡]	• Gentamicin 240 mg IM in 2 separate 3 mL injections of 40 mg/mL solution **PLUS** • Azithromycin 2 g PO in a single dose[‡]

Pharyngeal	
Preferred	**Alternatives**
• Ceftriaxone 250 mg IM in a single dose[*†] **PLUS** • Azithromycin 1 g PO in a single dose[‡]	• Cefixime 800 mg PO in a single dose[*§] **PLUS** • Azithromycin 1 g PO in a single dose[‡]

Source: Adapted from Public Health Agency of Canada, Gonococcal Infections Revised July 2017. Public Health Agency of Canada Treatment of N. gonorrhoeae in response to the discontinuation of spectinomycin: Alternative treatment guidance statement

Table 2. Gonorrhea. Treatment of Uncomplicated anogenital and pharyngeal infection in MSM

Urethral, rectal	
Preferred	**Alternatives**
• Ceftriaxone 250 mg IM in a single dose[*†] **PLUS** • Azithromycin 1 g PO in a single dose[‡]	• Cefixime 800 mg PO in a single dose[*§] **PLUS** • Azithromycin 1 g PO in a single dose[‡] **OR** • Gentamicin 240 mg IM in 2 separate 3 mL injections of 40 mg/mL solution **PLUS** • Azithromycin 2 g PO in a single dose
Pharyngeal	
Preferred	**Alternatives**
• Ceftriaxone 250 mg IM in a single dose[*†] **PLUS** • Azithromycin 1 g PO in a single dose[‡]	• Cefixime 800 mg PO in a single dose[*§] **PLUS** • Azithromycin 1 g PO in a single dose[‡]

Source: Adapted from Public Health Agency of Canada, Gonococcal Infections Revised July 2017. Public Health Agency of Canada Treatment of N. gonorrhoeae in response to the discontinuation of spectinomycin: Alternative treatment guidance statement

Table 3. Gonorrhea. Recommended treatment of Uncomplicated anogenital and pharyngeal infection in children < 9 years of age,

Urethral, vaginal, rectal	
Preferred	**Alternatives**
• Ceftriaxone 50mg/kg IM up to 250 mg in a single dose[*†] **PLUS** • Azithromycin 20mg/kg (maximum dose of 1 g) PO in a single dose **OR** • Cefixime 8 mg/kg PO BID X 2 doses (maximum 400 mg/dose) **PLUS** • Azithromycin 20mg/kg (maximum dose of 1 g) PO in a single dose	• Consult with expert in pediatric infectious diseases
Pharyngeal	
Preferred	**Alternatives**
• Ceftriaxone 50mg/kg IM up to 250 mg in a single dose[*†] **PLUS** • Azithromycin 20mg/kg (maximum dose of 1 g) PO in a single dose	• Cefixime 8 mg/kg PO BID X 2 doses (maximum 400 mg/dose) **PLUS** • Azithromycin 20mg/kg (maximum dose of 1 g) PO in a single dose
Important notes related to neonates (birth to one month of age): • In neonates the recommended dosage for ceftriaxone is 25-50 g/kg (maximum of 125 mg). • **Routine combination therapy with a macrolide is not recommended** due to the association with pyloric stenosis. Testing should be done for Chlamydia and if results are positive, treatment should be provided as per the Chlamydia chapter.	

Source: Adapted from Public Health Agency of Canada, Gonococcal Infections Revised July 2017. Public Health Agency of Canada Treatment of N. gonorrhoeae in response to the discontinuation of spectinomycin: Alternative treatment guidance statement

Gonococcal ophthalmia and disseminated infections

Table 4. Gonorrhea. Recommended treatment of gonococcal ophthalmia and disseminated infections in adults and youth 9 years of age and older.

Infections	Preferred treatment
Arthritis	Ceftriaxone 2 g IV/IM daily for 7 days **PLUS**[Ψ] Azithromycin 1 g PO in a single dose
Meningitis	Ceftriaxone 2 g IV/IM daily for 10-14 days[Ψ] **PLUS** Azithromycin 1 g PO in a single dose
Endocarditis	Ceftriaxone 2 g IV/IM daily for 28 days[Ψ] **PLUS** Azithromycin 1 g PO in a single dose
Opthalmia	Ceftriaxone 2 g IV/IM in a single dose[Ψ] **PLUS** Azithromycin 1 g PO in a single dose
NOTE: Hospitalization is indicated for meningitis and may also be indicated for other disseminated infections.	

Source: Adapted from Public Health Agency of Canada, Gonococcal Infections Revised July 2013.

Table 5. Gonorrhea. Recommended treatment of gonococcal ophthalmia and disseminated infections in children >1 month and < 9 years of age.

Infections	Preferred treatment
Arthritis	Ceftriaxone 50 mg/kg IV/IM daily for 7 days (maximum dose of 1 g/day)[Ψ] **PLUS** Azithromycin 20 mg/kg (maximum dose of 1 g) PO in a single dose
Meningitis	Ceftriaxone 50 mg/kg IV/IM q 12 h for 10-14 days (maximum dose of 1 g/dose and 2 g/day)[Ψ] **PLUS** Azithromycin 20 mg/kg (maximum dose of 1 g) PO in a single dose
Endocarditis	Ceftriaxone 50 mg/kg IV/IM q 12 h for 28 days (maximum dose of 1 g/dose and 2 g/day)[Ψ] **PLUS** Azithromycin 20 mg/kg (maximum dose of 1 g) PO in a single dose
Ophthalmia beyond neonatal period	Ceftriaxone 50 mg/kg IV/IM in a single dose (maximum dose of 2 g) **PLUS** Azithromycin 20 mg/kg (maximum dose of 1 g) PO in a single dose
NOTE: Hospitalization is indicated for meningitis and may also be indicated for other disseminated infections.	

Source: Adapted from Public Health Agency of Canada, Gonococcal Infections Revised July 2013.

Gonorrhea and Neonates:

Neonates born to infected untreated mothers must be tested and treatment be initiated without waiting for test results.

Culture conjunctivae prior to administering antibiotics. If the infant is unwell in any way, also culture blood and cerebrospinal fluid to rule out disseminated infection.

Table 6. Gonorrhea. Ophthalmia neonatorum

Preferred treatment: Ceftriaxone 25-50 mg/kg IM in a single dose, maximum dose of 125mg
Important notes: • Irrigate eyes immediately with sterile normal saline and at least hourly as long as necessary to eliminate discharge**.** • Prophylactic treatment for possible chlamydial co-infection is not recommended unless follow-up cannot be assured. Testing should be done for chlamydia and if results are positive, treatment should be provided as per *Chlamydia* section. • **Hospitalization and consultation with an expert in infectious diseases should be initiated as soon as possible.** • **Appropriate infection prevention and control precautions are necessary for all cases until 24 hours of effective therapy completed.**

Source: Adapted from Public Health Agency of Canada, Gonococcal Infections Revised July 2013.

Table 7. Gonorrhea. Neonates born to women infected with gonorrhea

Preferred treatment: Ceftriaxone 25-50 mg/kg IM in a single dose (maximum dose of 125 mg)
Important notes: • Prophylactic treatment for possible chlamydial co-infection is not recommended unless follow-up cannot be assured. Testing should be done for Chlamydia and if results are positive, treatment should be provided as per Chlamydia section.

Source: Adapted from Public Health Agency of Canada, Gonococcal Infections Revised July 2013.

Table 8. Gonorrhea. Neonates with disseminated gonococcal arthritis, meningitis or endocarditis.

Preferred treatment: Cefotaxime 50 mg/kg IV/IM q6h for 10-14 days$^{\Psi}$
Important notes: • **Hospitalization and consultation with an expert in infectious diseases should be initiated as soon as possible.** • Prophylactic treatment for possible chlamydial co-infection is not recommended unless follow-up cannot be assured. Testing should be done for chlamydia and if results are positive, treatment should be provided as per *Chlamydia* section.

Source: Adapted from Public Health Agency of Canada, Gonococcal Infections Revised July 2013.

Footnotes:

[*] Cefixime and ceftriaxone should not be given to persons with a cephalosporin allergy or a history of immediate and/or anaphylactic reactions to penicillins.

[†] The preferred diluent for ceftriaxone is 1% lidocaine without epinephrine (0.9 mL/250 mg, 0.45 mL/125 mg) to reduce discomfort.

[‡] **Alternate combination therapy:** Azithromycin 1 g PO is preferred over the alternative of doxycycline 100 mg PO bid X 7 days, due to significant rates of tetracycline-resistant gonorrhea and concerns regarding compliance with a 7-day treatment regimen. **Doxycycline is contraindicated in pregnant and breastfeeding women.**

[§] There is scientific evidence that cefixime 800 mg is safe and effective in treating gonococcal infections. Pharmacodynamic studies have shown that 800 mg of cefixime compared to 400 mg, increases the period when the free drug concentration exceeds the MIC. Therefore, a dosage of 800 mg may be more effective than the previously recommended 400 mg at reducing the risk of gonococcal treatment failure in settings of reduced cephalosporin susceptibility.

[Ψ] This is the usual duration of therapy but all cases should be discussed with an infectious diseases expert.

Revisions

Date	Change
September 2018	• Removed reference to Spectinomycin • Added Gentamicin as the alternate treatment • Removed reference to use of Azithromycin 2g as monotherapy. • Updated into new format of CDC Manual

Lymphogranuloma Venereum (LGV)

- In the absence of a contraindication, the following treatment options are recommended:

Table 1. LGV. Treatment of lymphogranuloma venereum

First Line	• Doxycycline 100 mg PO bid for 21 days
Alternative	• Erythromycin 500 mg PO qid for 21 days*
Possible	• Azithromycin 1 g PO once weekly for 3 weeks†

Source: Canadian Guidelines on Sexually Transmitted Infections 2010.

*Erythromycin dosage refers to the use of erythromycin base. Equivalent dosages of other formulations may be substituted (with the exception of the estolate formulation, which is contraindicated in pregnancy); erythromycin (NOT the estolate formulation) should be used in pregnancy.

†While some experts believe azithromycin to be effective in the treatment of LGV, clinical data are lacking.

- Clients should be followed until chlamydial tests are negative (test of cure) and the client has clinically recovered. Test of cure should be performed at 4 weeks after the completion of effective treatment.
- Testing for chancroid and donovanosis (granuloma inguinale) should also be considered especially if there has been travel to regions where these infections are endemic.
- Aspiration of buboes may help symptomatically; however, incision/drainage or excision of nodes is not helpful and may delay healing.
- Suspected cases should be treated (with appropriate antibiotic regimen) empirically for LGV while awaiting test results.

Syphilis

- In the absence of a contraindication, the following treatment options are recommended:

Table 1. Syphilis. Treatment: Non-pregnant adults

Stage	Preferred treatment[Ψ]	Alternative treatment for penicillin-allergic patients
All **non-pregnant adults who are not co-infected with HIV** • **Primary** • **Secondary** • **Early latent** (<1year duration)	Benzathine penicillin G 2.4 million units IM as a single dose[*]	• Doxycycline 100mg PO bid for 14 days **Alternative agents (only to be used in exceptional circumstances and should be discussed with the MHO)**[†] • Ceftriaxone 1 g IV or IM daily for 10 days
All non-pregnant adults • **Late latent** syphilis • **Latent** syphilis of unknown duration • **Cardiovascular syphilis** and other **tertiary syphilis** not involving the central nervous system	Benzathine penicillin G 2.4 million units IM weekly for 3 doses	• Consider penicillin desensitization • Doxycycline 100mg PO bid for 28 days **Alternative agents (only to be used in exceptional circumstances and should be discussed with the MHO)**[†] • Ceftriaxone 1 g IV or IM daily for 10 days
All adults • **Neurosyphilis**	Penicillin G 3-4 million units IV q4 h (16-24 million units/day) for 10-14 days	• Strongly consider penicillin desensitization followed by treatment with penicillin • Ceftriaxone 2 g IV/IM qd x 10-14 days

Stage	Preferred treatment[Ψ]	Alternative treatment for penicillin-allergic patients
Epidemiological treatment of sexual contacts in the preceding 90 days to primary, secondary and early latent syphilis[§]	Benzathine penicillin G 2.4 million units IM as a single dose.	See comment on Azithromycin[¥]

Source: Adapted from Canadian Guidelines on Sexually Transmitted Infections 2018.

[Ψ]Reports from some jurisdictions have indicated inappropriate use of short-acting benzylpenicillin (Penicillin G) (IM) for the treatment of infectious syphilis rather than long-acting Benzathine penicillin G (Bicillin-LA). Practitioners, pharmacists and purchasing agents should be aware of the similar names of these two products to prevent and avoid inappropriate and inadequate treatment. Long-acting benzathine penicillin achieves detectable serum levels of penicillin for 2-4 weeks in non-pregnant adults and is required to adequately treat infectious syphilis; short acting penicillin agents are not adequate for achieving cure.
[†]The efficacy data supporting the use of these agents is limited, and as such they should only be used in exceptional circumstances and when close patient follow-up is assured.
[*]Some experts recommend 3 weekly doses (total of 7.2 million units) of benzathine penicillin G in HIV infected individuals.
[§]If sexual contact is unreliable or unable to test, then epidemiological treatment should be strongly considered. Epidemiological treatment should be strongly considered in these individuals; even if more than 30 days after exposure (see -Management of Contacts – below).
[¥]Azithromycin In light of recent reports of failure of azithromycin for the treatment of early syphilis and the rapid development of azithromycin resistance in *T. pallidum*, this agent should not be routinely used as a treatment option for early or incubating syphilis unless adequate and close follow up can be ensured, and only in jurisdictions where little to no azithromycin genotypic resistance in *T. pallidum* has been demonstrated. It should be noted, however, that at the present time, very limited Canadian data on the prevalence of Azithromycin resistance in *T. pallidum* is available, with 1 of 47 specimens between 2000-2003 as compared with 4 of 9 specimens from MSM in 2004-2005 collected in Vancouver demonstrating resistance. A recent analysis of specimens from Alberta showed that 4 of 14 syphilis cases between February 2007 and January 2008 were azithromycin resistant; all cases were in MSM except for one neonate with congenital syphilis whose father acquired syphilis outside of Canada.

Table 2. Syphilis. Treatment: Pregnant women

Stage	Preferred treatment[Ψ]	Alternative treatment for penicillin-allergic patients
Pregnant women • **Primary** • **Secondary** • **Early latent** (<1year duration)	Benzathine penicillin G 2.4 million units IM weekly for 1-2 doses[*¥]	• There is no satisfactory alternative to penicillin for the treatment of syphilis in pregnancy; insufficient data exist to recommend ceftriaxone in pregnancy. • Strongly consider penicillin desensitization followed by treatment with penicillin
Pregnant women • **Late latent** syphilis • **Latent** syphilis of unknown duration • **Cardiovascular syphilis** and other **tertiary syphilis** not involving the central nervous system	Benzathine penicillin G 2.4 million units IM weekly for 3 doses	

Source: Adapted from Canadian Guidelines on Sexually Transmitted Infections 2018.

[Ψ]Reports from some jurisdictions have indicated inappropriate use of short-acting benzylpenicillin (Penicillin G) (IM) for the treatment of infectious syphilis rather than long-acting Benzathine penicillin G (Bicillin-LA). Practitioners, pharmacists and purchasing agents should be aware of the similar names of these two products to prevent and avoid inappropriate and inadequate treatment. Long-acting benzathine penicillin achieves detectable serum levels of penicillin for 2-4 weeks in non-pregnant adults and is required to adequately treat infectious syphilis; short acting penicillin agents are not adequate for achieving cure.

[*]Some experts recommend 3 weekly doses (total of 7.2 million units) of benzathine penicillin G in HIV infected individuals.

[¥]Given the complexity of accurately staging early syphilis, some experts recommend that primary, secondary and early latent cases in pregnancy be treated with 2 doses of benzathine penicillin G 2.4 million units 1 week apart; the efficacy of this regimen in preventing fetal syphilis is not known. Refer to the Saskatchewan Health Authority Maternal/Children's Health - Clinical Resources for further guidance.

Revisions

Date	Change
July 27, 2023	Added link in Table 2 footnote to Saskatchewan Health Authority Maternal/Children's Health - Clinical Resources