



BC Centre for Disease Control
Provincial Health Services Authority

Clinical Prevention Services
Provincial STI Services
655 West 12th Avenue
Vancouver, BC V5Z 4R4
Tel : 604.707.5600
Fax: 604.707.5604
www.bccdc.ca

BCCDC Non-certified Practice Decision Support Tool
Vulvovaginal Candidiasis (VVC)

VULVOVAGINAL CANDIDIASIS (VVC)

SCOPE

RNs may diagnose and recommend over-the-counter (OTC) treatment for vulvovaginal candidiasis (VVC).

ETIOLOGY

VVC is a common clinical condition with symptoms and signs of vulvar and/or intravaginal inflammation (commonly known as a ‘yeast infection’) in the presence of *Candida* species. The most common cause of VVC is *Candida albicans* (*C. albicans*); however, non-*albicans Candida* (NAC) species are emerging (e.g., *C. glabrata*, *C. tropicalis*, *C. parapsilosis*).

EPIDEMIOLOGY

VVC is the second most common cause of vaginitis. It is estimated that 75% of people will have at least one episode of VVC in their lifetime and 40-45% will experience two or more episodes. Rarely occurs before menarche, VVC incidence peaks during reproductive years and declines following menopause (unless person is on hormone-replacement therapy [HRT]). Incidence and prevalence is difficult to determine, and varies between countries and ethnicities.

Risk Factors

- antibiotic use
- corticosteroid use
- diabetes
- HIV infection
- hyperestrogenemia (e.g., HRT, combined OCP)
- immunocompromised
- pregnancy
- not usually considered sexually transmitted

CLINICAL PRESENTATION

- abnormal changes vaginal discharge; odourless vaginal discharge may appear white, clumpy, thick and/or curdy
- vulvar and/or intravaginal itch, irritation and/or burning
- superficial dyspareunia (usually at the vaginal introitus)
- external dysuria
- vulvar and/or vaginal erythema and/or edema
- vulvar fissures, dryness, cracks in skin and/or excoriation

For people who are peri-menopausal or in menopause, consider consultation with or referral to MD or NP for differential diagnosis and alternate treatment options.

PHYSICAL ASSESSMENT

- assess vulva and vagina for erythema and edema
- assess vulvar skin for fissures, dryness, cracks or excoriation (e.g., labial folds)
- assess vaginal discharge
- assess vaginal pH (is typically ≤ 4.5 with VVC), if available
- perform KOH Whiff test (which is typically negative with VVC), if available

DIAGNOSTIC AND SCREENING TESTS

Depending on the agency lab kits and guidelines, the following diagnostic tests that may be used:

Specimen	Tests
vaginal swab (client- or clinician-collected)*	vaginal swab or smear on slide for gram stain
	vaginal pH
	KOH whiff test

*For people on testosterone or after vaginoplasty, refer to the [STI Assessment DST](#) for recommended diagnostic tests.

Notes:

- If a client does not require or defers a pelvic examination, then a blind vaginal swab may be collected (by the client or the clinician).
- For more information on KOH whiff testing see: [Safe Use of 10% Potassium Hydroxide in STI Screening](#) located in the BCCDC Communicable Disease Control (CDC) Manual Chapter 5: Sexually Transmitted Infections.

MANAGEMENT

Diagnosis and Clinical Evaluation

The diagnosis and treatment of VVC is made based on the health history and clinical findings.

Positive lab results support a diagnosis for symptomatic clients. Because yeast can be a normal finding in vaginal flora, positive lab results for asymptomatic clients do not support diagnosis or treatment of VVC.

Consultation and Referral

Consult with or refer to a physician (MD) or nurse practitioner (NP) all clients who:

- have complicated VVC, which includes:
 - recurrent VVC (RVVC): 4 or more previously treated episodes of VVC within one year
 - severe VVC (vulvar erythema, edema, excoriation & fissure formation)
- are pregnant or breast-/chest-feeding
- have experienced more than two episodes of VVC within an 8-week timeframe

Treatment

Clients may purchase first choice treatments over-the-counter (OTC) and choose between the formulations in the treatment chart. Clients can refer to the package insert for proper application.

Treatment for Vaginal Symptoms	Notes
<p>First Choice</p> <p>Vaginal insert or oral treatment (have similar efficacy)</p>	<p>1. Review information on the BCCDC Medication Handouts and your agency’s drug reference database, including:</p> <ul style="list-style-type: none"> Allergies, interactions and side effects How to take the medication After-care information
<p>Vaginal insert: clotrimazole (Canestan®) or miconazole (Monistat®) vaginal inserts or cream; insert as per package (for 3, 6 or 7 nights)</p>	<p>2. Clotrimazole</p> <ul style="list-style-type: none"> If client is taking or has recently taken antibiotics for a bacterial infection, it is recommended that they use a full 6- to 7-day regimen to treat a vaginal yeast infection, rather than a shorter duration.
<p>Oral treatment: fluconazole 150 mg tablet PO in a single dose</p>	<p>3. Miconazole</p> <ul style="list-style-type: none"> If client is taking or has recently taken antibiotics for a bacterial infection, it is recommended that they use a full 6- to 7-day regimen to treat a vaginal yeast infection, rather than a shorter duration. Miconazole may be contraindicated when taken with certain anticoagulants. Consult with a MD or NP for clients on anticoagulant therapy or other contraindications to treatment.
<p>Alternative Treatment</p>	
<p>Intravaginal capsules: boric acid 600 mg once per day for 14 days</p>	
<p>Treatment for External Symptoms</p>	
<p>First Choice</p> <p>Topical Cream</p>	
<p>clotrimazole topical cream applied twice daily for 10 to 14 days</p>	<p>4. Fluconazole</p> <ul style="list-style-type: none"> Fluconazole is contraindicated in clients who have shown hypersensitivity to other azole drugs. Fluconazole is contraindicated in pregnancy; consult a MD or NP for alternative treatment options. Fluconazole is used with caution during breast-/chest-feeding; consult a MD or NP. Fluconazole may be contraindicated when administered while the client is taking several types of medications. Advise the client to read the medication package insert carefully prior to taking fluconazole and to consult with a pharmacist regarding medication reconciliation if they are taking other medications when purchasing fluconazole.
<p>miconazole topical cream applied twice daily for 10 to 14 days</p>	<p>5. Boric Acid</p> <ul style="list-style-type: none"> For clients who continue to experience symptoms of VVC after completion of first choice treatment (azole therapy), boric acid treatment intravaginally may be recommended, although data on efficacy is limited and inconclusive.

	<p>Treatment failure could be due to an infection with a NAC strain of yeast (e.g., <i>C. glabrata</i>).</p> <ul style="list-style-type: none">• Boric acid can be fatal if ingested orally. <p>6. Consult with or refer to MD or NP if client is unable to take recommended treatments.</p>
--	--

Monitoring and Follow-up

- **Repeat testing:** No
- **Test-of-cure (TOC):** No
- **Follow-up:** further assessment and treatment may be indicated if symptoms persist for more than one week following antifungal treatment, or if symptoms recur

Partner Counselling

- **Reportable:** No
- **Trace-back period:** N/A
- **Recommended partner follow-up:** not required unless they are experiencing symptoms

Potential Complications

- recurrent VVC (RVVC) (4 or more episodes within one year)
- severe VVC - extensive vulvar erythema, edema, excoriation or fissure formation
- chronic VVC - a chronic, continuous and unremitting form of VVC; typically evolving from recurrent VVC

Additional Client Education

Counsel client:

- that many topical and intravaginal agents are oil-based and may weaken latex condoms and diaphragms, and cause them to fail.
- that mild soap can be used to clean external genitalia.
- to continue to apply topical antifungal cream for at least 10 days even if symptoms begin to resolve earlier.
- that while symptomatic with VVC, there is an increased risk of STI acquisition or transmission.
- that there are mixed results regarding the benefit of oral probiotics in reducing recurrent vulvovaginal candidiasis and maintaining balanced vaginal flora. Although studies demonstrate the benefit of reducing episodes of bacterial vaginosis through ingestion of oral lactobacilli in yogurt, the same reduction in episodes of VVC is less apparent.

- that there is insufficient evidence (e.g., from randomized controlled trials) that the ingestion of garlic, tea tree oil, yogurt (or other products with live lactobacillus species), specific dietary recommendations, or vaginal douching are effective in treating or preventing VVC.
- if peri-menopausal or in menopause, consider using OTC lubricant for vaginal dryness or discomfort.
- [Standard Client Education for Sexually Transmitted Infections and Blood-Borne Infections \(STBBI\)](#)

REFERENCES

- Adjapong G, Hale M, Garrill A. A comparative investigation of azole susceptibility in *Candida* isolates from vulvovaginal candidiasis and recurrent vulvovaginal candidiasis patients in Ghana. *Medical mycology*. 2017 Aug 1;55(6):686–9.
- Aguin TJ, Sobel JD. Vulvovaginal candidiasis in pregnancy. *Current infectious disease reports*. 2015 Jun;17(6):462.
- Akimoto-Gunther L, Bonfim-Mendonça P de S, Takahachi G, Irie MMT, Miyamoto S, Consolaro MEL, et al. Highlights Regarding Host Predisposing Factors to Recurrent Vulvovaginal Candidiasis: Chronic Stress and Reduced Antioxidant Capacity. *PloS one*. 2016 Jul 14;11(7):e0158870.
- Alberta Health Services (AHS) Vaginitis. The Blue Book Standards for the Management and Evaluation of STI Clinic Clients. 2019;:121-8. Available from:
<https://www.albertahealthservices.ca/assets/info/hp/srh/if-hp-the-blue-book.pdf>.
- Australasian Sexual Health Alliance (ASHA). Candidiasis. Australian STI Management Guidelines for use in Primary Care. 2018. Available from:
<http://www.sti.guidelines.org.au/sexually-transmissible-infections/infections-associated-with-sex/candidiasis>.
- Belayneh M, Sehn E, Korownyk C. Recurrent vulvovaginal candidiasis. *Canadian family physician Medecin de famille canadien* . 2017 Jun;63(6):455.
- Blostein F, Levin-Sparenberg E, Wagner J, Foxman B. Recurrent vulvovaginal candidiasis. *Annals of epidemiology*. 2017 Sep;27(9):575. Available from:
<https://doi.org/10.1016/j.annepidem.2017.08.010>.
- British Association for Sexual Health and HIV (BASHH). United Kingdom national guideline on the management of vulvovaginal candidiasis. 2007. Available from:
<https://www.bashhguidelines.org/media/1155/united-kingdom-national-guideline-on-the-management-of-vulvovaginal-candidiasis.pdf>.
- Buggio L, Somigliana E, Borghi A, Vercellini P. Probiotics and vaginal microecology: fact or fancy? *BMC women's health*. 2019 Jan 31;19(1):25.
- Centers for Disease Control and Prevention (CDC) Vulvovaginal candidiasis 2015 Sexually Transmitted Diseases Treatment Guidelines. 2015;65:75-8. Available from:
<https://www.cdc.gov/std/tg2015/candidiasis.htm>.
- Felix TC, de Brito Röder DVD, Dos Santos Pedrosa R. Alternative and complementary therapies for vulvovaginal candidiasis. *Folia microbiologica*. 2019 Mar;64(2):133–41.
- Gonçalves B, Ferreira C, Alves CT, Henriques M, Azeredo J, Silva S. Vulvovaginal candidiasis: Epidemiology, microbiology and risk factors. *Critical reviews in microbiology*. 2016 Nov;42(6):905–27.

- Government of Australia. Candidiasis. Silver book: Guidelines for managing sexually transmitted infections and blood-borne viruses. 2015. Available from: <https://ww2.health.wa.gov.au/Silver-book/Non-notifiable-infections/Candidiasis>.
- Makanjuola O, Bongomin F, Fayemiwo SA. An Update on the Roles of Non- albicans Candida Species in Vulvovaginitis. *Journal of fungi (Basel, Switzerland)*. 2018 Oct 31;4(4).
- Martin Lopez JE. Candidiasis (vulvovaginal). *BMJ clinical evidence*. 2015 Mar 16;2015.
- Mtibaa L, Fakhfakh N, Kallel A, Belhadj S, Belhaj Salah N, Bada N, et al. Vulvovaginal candidiasis: Etiology, symptomatology and risk factors. *Journal de mycologie medicale*. 2017 Jun;27(2):153–8. Available from: <https://doi.org/10.1016/j.mycmed.2017.01.003>.
- Nguyen Y, Lee A, Fischer G. Management of chronic vulvovaginal candidiasis: a long term retrospective study. *The Australasian journal of dermatology*. 2017 Nov;58(4):e188–92.
- Public Health Agency of Canada (PHAC). Management and treatment of specific syndromes - Vaginal discharge. *Canadian Guidelines on Sexually Transmitted Infections*. 2013. Available from: <https://www.canada.ca/en/public-health/services/infectious-diseases/sexual-health-sexually-transmitted-infections/canadian-guidelines/sexually-transmitted-infections/canadian-guidelines-sexually-transmitted-infections-26.html>.
- Qin F, Wang Q, Zhang C, Fang C, Zhang L, Chen H, et al. Efficacy of antifungal drugs in the treatment of vulvovaginal candidiasis: a Bayesian network meta-analysis. *Infection and drug resistance*. 2018 Oct 17;11:1893–901.
- Rodríguez-Cerdeira C, Gregorio MC, Molares-Vila A, López-Barcenas A, Fabbrocini G, Bardhi B, et al. Biofilms and vulvovaginal candidiasis. *Colloids and surfaces B, Biointerfaces*. 2019 Feb 1;174:110–25.
- Sobel JD. Recurrent vulvovaginal candidiasis. *American journal of obstetrics and gynecology*. 2016 Jan;214(1):15–21. Available from: <https://doi.org/10.1016/j.ajog.2015.06.067>.
- Sobel JD. *Candida vulvovaginitis: Clinical manifestations and diagnosis*. UpToDate. 2018.
- Sobel JD. *Approach to women with symptoms of vaginitis*. UpToDate. 2019a.
- Sobel J.D. *Candida vulvovaginitis: Treatment*. UpToDate. 2019b.
- Trans Care BC. *Gender-affirming care for Trans, Two-spirit, and gender-diverse patients in BC: A primary care toolkit*. 2019;;:30-5. Available from: <http://www.phsa.ca/transcarebc/Documents/HealthProf/Primary-Care-Toolkit.pdf>.
- van Schalkwyk J, Yudin MH. Vulvovaginitis: Screening for and management of trichomoniasis, vulvovaginal candidiasis and bacterial vaginosis. *Journal of obstetrics and gynaecology Canada : JOGC = Journal d'obstetrique et gynecologie du Canada: JOGC*. 2016 Dec;38(12S):S587–96.
- World Health Organization (WHO) 2018 European (IUSTI/WHO) guideline on the management of vaginal discharge. 2018.

Zeng X, Zhang Y, Zhang T, Xue Y, Xu H, An R. Risk Factors of Vulvovaginal Candidiasis among Women of Reproductive Age in Xi'an: A Cross-Sectional Study. *BioMed research international*. 2018 Jun 7;2018:9703754.